

# User's Manual

V1.10

HSG Series

Wireless Hotspot Gateway

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# 1 Before You Start





## 1.1 Preface

This manual is for WLAN service providers or network administrators to set up a network environment using the HSG Hotspot Gateway Series. It contains step-by-step procedures and graphic examples to guide MIS staff or individuals with slight network system knowledge to complete the installation.

### Corresponding Software Versions for each Model

HSG260	Up to software version 2.30
HSG320	Up to software version 1.10
HSG327	Up to software version 1.10

## 1.2 Document Conventions

<b>Caution:</b>	Represents essential steps, actions, or messages that should not be ignored.
<b>Note:</b>	Contains related information that corresponds to a topic.
	Indicates that clicking this button will apply all of your settings.
	Indicates that clicking this button will clear what you have set before the settings are applied.
	Indicates that clicking this button will save the changes you made, but you must reboot the system upon the completion of all configuration settings for the changes to take effect.
	The red asterisk indicates that information in this field is compulsory.

## 1.3 Package Checklist

The standard package of Hotspot Gateway Series HSG includes:

- HSG260 / HSG320 / HSG327 x 1
- CD-ROM (with User's Manual and QIG) x 1
- Quick Installation Guide (QIG) x 1
- Ethernet Cable x 1
- Console Cable x 1 (Not included for HSG327)
- Power Adapter (DC 5V) x 1 (HSG260)
- Power Adapter (DC 12V) x1 (HSG320)
- Detachable antenna (x 2 for HSG260 and x 4 for HSG320)

**Caution:**

*It is highly recommended to use all the supplies in the package instead of substituting any components with other suppliers to guarantee best performance.*

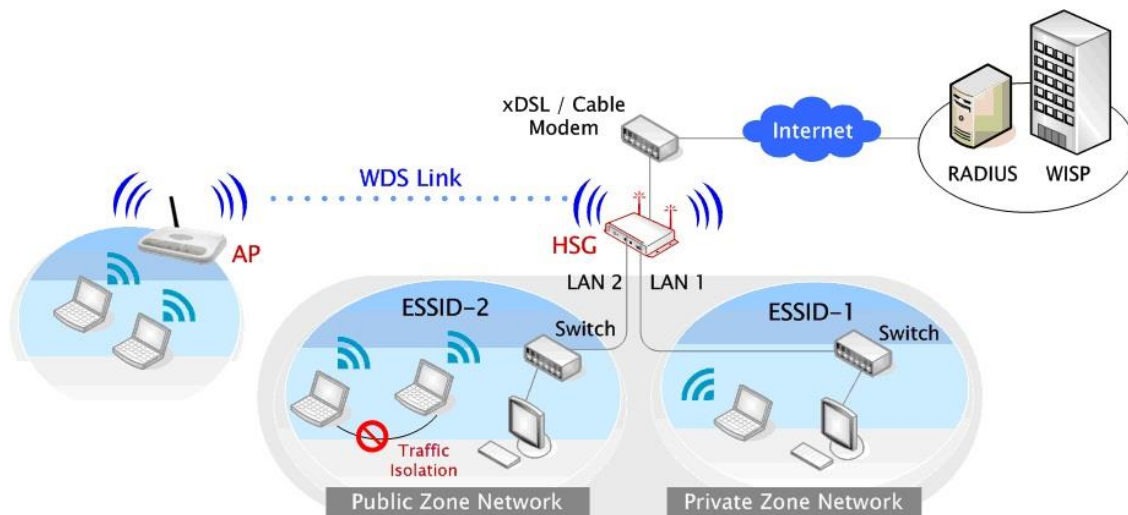
## 2 System Overview and Getting Started

### 2.1 Introduction of the Hotspot Gateway HSG Series

The **HSG** gateway series is the most economical and feature-rich **Wireless Hotspot Gateway**, targeting mini-size stores that want to provide small, single-point wireless Internet access service. The HSG gateway is a perfect choice for beginners to run hotspot businesses. It does not cost much compared to buying a pile of equipment, nor does it take the skills of an expert to glue multiple applications out of multiple freeware. Feature-packed for hotspot operation, the HSG gateway comes with **built-in 802.11 n/b/g (a/b/g/n for dual RF models) MIMO access point**, **web server and web pages for clients to login**, **easy logo-loading for branding a hotspot store**, **simple user/visitor account management tool**, **payment plans**, **multiple credit card gateways**, **traffic logs**, **IP sharing** and etc. The HSG gateway also brings in an extra advantage - the wall-mountable IP50 dust-proof (HSG260 / HSG320) or ceiling mountable (HSG327) housing.

### 2.2 System Concept

The HSG gateway is capable of managing user authentication, authorization and accounting. The user account information is stored in the local database or a specified external RADIUS database server. Featured with user authentication and integrated with external payment gateway, the HSG gateway allows users to easily pay the fee and enjoy the Internet service using credit cards through a variety of payment gateways including Authorize.Net, PayPal, SecurePay, and WorldPay. Furthermore, the HSG gateway introduces the concept of Service Zones – Private Zone and Public Zone, each with its own definable access control profiles. Private Zone means clients are not required to be authenticated before using the network service. However, clients in Public Zone are required to get authentication before using the network service. This is very useful for hotspot owners seeking to deploy wireless network service for clients and manage the network as well. The following diagram is an example of a HSG gateway set to manage the Internet and network access services at a hotspot venue.



**[ Example: A typical Hotspot network ]**

## 2.3 The HSG Series Hardware Overview

### HSG260



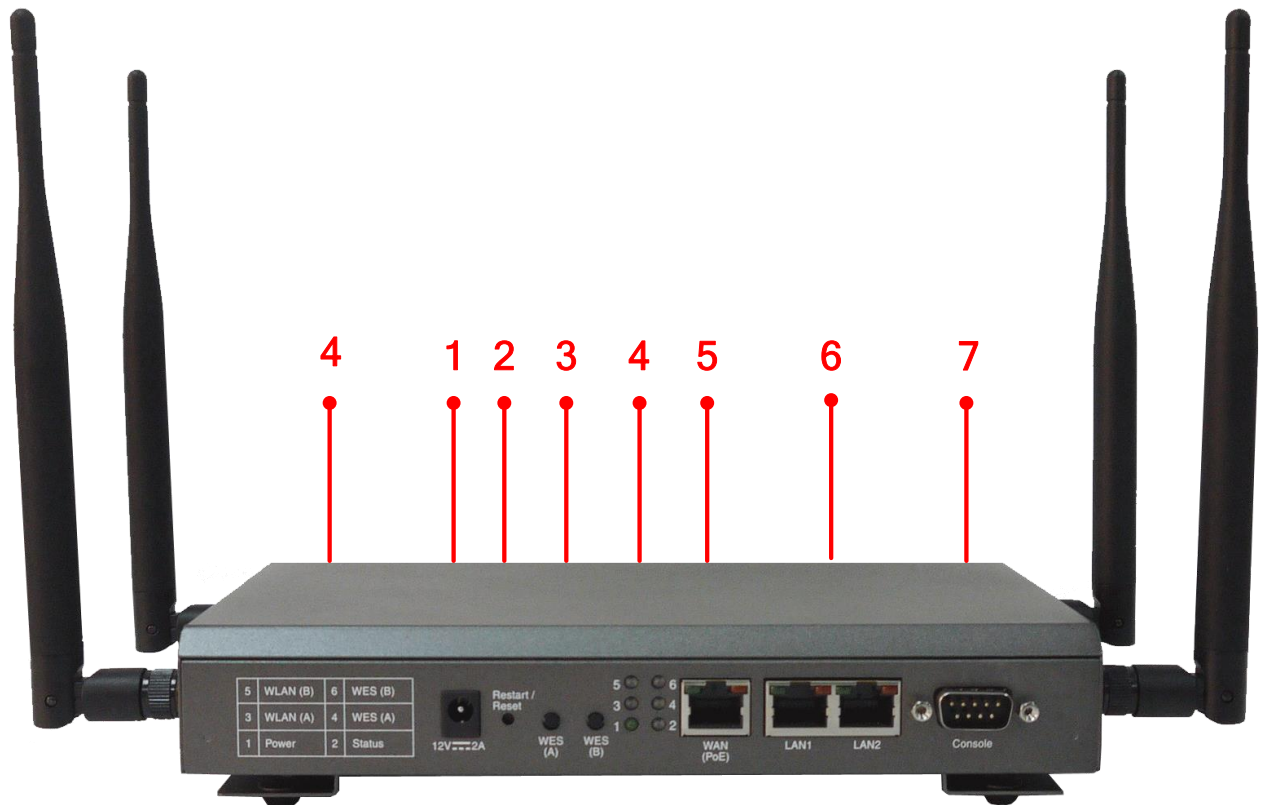
**Rear Panel**


1	<b>Antenna connector</b>	Reverse SMA connectors for attaching antenna as shown in above figure.
2	<b>WAN</b>	For attaching an Ethernet cable to an uplink service.
3	<b>LAN 1- 4 ports</b>	Attach Ethernet cables here for connecting to the wired local network.
4	<b>USB 2.0 port</b>	Reserved for future use.
5	<b>Console port</b>	Attach the serial cable here to access console interface.
6	<b>5V 2 A</b>	Attach the power adapter here.
7	<b>Reset button</b>	Press once to restart the system; Press and hold for more than 5 seconds to reset to factory default.



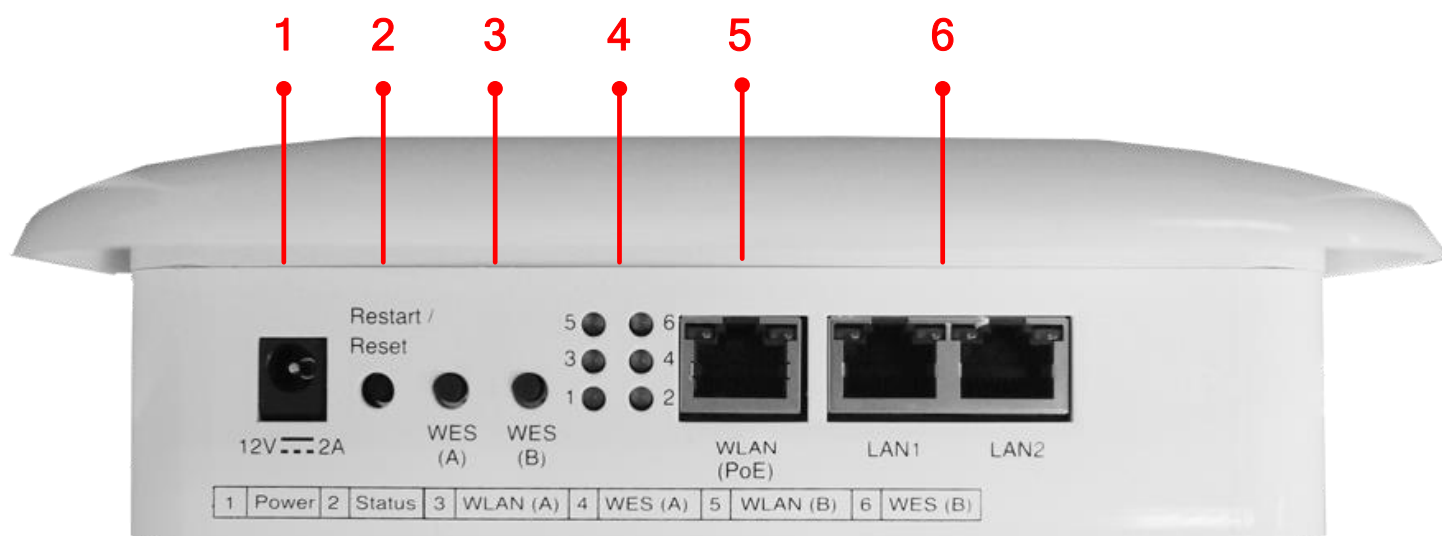
### Front Panel

1		<b>Quick button</b>	Press this button to quick-print an account generated from billing plan 1.		
2		<b>WES button</b>	Press and hold over 5 seconds to initiate Master Mode for the WES process. Press and release to initiate Slave Mode for the WES process.		
3		<b>Power LED</b>	On indicates power on.		
4		<b>Status LED</b>	On indicates the system ready.		
5		<b>Wireless LED</b>	On indicates wireless network interface is ready for service.		
6		<b>WAN LED</b>	On indicates that WAN uplink connected.		
7		<b>LAN1 - 4 LED</b>	Indicates the connection status of each LAN.		
8		<b>USB LED</b>	Indicates the status of USB connection. USB port reserved for future use.		
9		<b>WES LED</b>	For indicating WDS connection status.		
				Master	Slave
			WES Start	LED (Green) OFF and then BLINKING SLOWLY	LED (Red) OFF and then BLINKING SLOWLY
			WES Negotiate	BLINKING NORMALLY (Green)	BLINKING NORMALLY (Red)
			WES Timeout	LED (Green) ON	LED (Red) ON
			WES Success	LED (Red) ON	LED (Green) ON
			WES Fail	LED (Green) ON	LED (Red) ON

**HSG320****Rear Panel**

1	12V  2A	Power Jack Socket for the power adaptor.
2	Restart / Reset	Press once to restart the system; Press and hold for more than 5 seconds to reset to factory default.
3	WES Button (A / B)	WDS Easy Setup. Press the button to build up a WDS link with another peer. 2 WDS links can be set up per RF card.
4	LED Indicators	6 indicators that displays the states of 6 various functions or progresses. The numbers are explained on the leftmost side of the rear panel.
5	WAN	For attaching an Ethernet cable to an uplink service. PoE (Power over Ethernet) is supported for the WAN port.
6	LAN Ports 1 - 2	The ports for connections with LAN side devices.
7	Console Port	To access HSG320 via the console interface.

## HSG327



### Rear Panel

1	12V 2A	Power Jack Socket for the power adaptor.
2	Restart / Reset	Press once to restart the system; Press and hold for more than 5 seconds to reset to factory default.
3	WES Button	WDS Easy Setup. Press the button to build up a WDS link with another peer.
4	LED Indicators	4 LED lights are available. What the numbers stand for is listed at the bottom of the panel.
5	WAN	For attaching an Ethernet cable to an uplink service. PoE (Power over Ethernet) is support for the WAN port.
6	LAN Ports 1 – 2	Attach Ethernet cables here to connect to the wired local network.



## 2.4 System Requirement

- Gigabit Ethernet network cables with RJ-45 connectors.
- All PCs need to install the TCP/IP network protocol.

## 2.5 Installation Steps

Please follow the steps mentioned below to install the hardware of the HSG gateway:

### 1. Place the HSG gateway at the best location.

The best location is usually at the center of your wireless network.

### 2. To supply power to the HSG gateway.

Connect the **power adapter** to the HSG gateway's power jack socket on the rear panel.

### 3. Connect HSG gateway to your outbound network device.

Connect one end of the **Ethernet cable** to the WAN port of HSG the gateway on the rear panel. Depending on the type of internet service provided by your ISP, connect the other end of the cable to the ATU-Router of an ADSL, a cable modem, a switch or a hub. The WAN LED indicator should be ON to indicate a proper connection.

### 4. Connect the HSG gateway to your PC.

Connect one end of the **Ethernet cable** to the LAN1 port of the HSG gateway on the rear panel. Connect the other end of the cable to a PC for configuring the system. The LAN1 LED indicator should be ON to indicate a proper connection.

#### Note:

The HSG gateway has two virtual **Private** and **Public zones** that are mapped to LAN1, LAN2 (192.168.1.254) and LAN3, LAN4 (192.168.11.254) respectively on the HSG260.

The HSG gateway has two virtual Private and Public zones that are mapped to LAN1 (192.168.1.254) and LAN2 (192.168.11.254) respectively on the HSG320/HSG327.

Now, the hardware installation is complete.

#### Caution:

Please use **only** the power adapter supplied with the HSG package. Using a different power adapter may cause damage to this system.

#### Caution:

To verify the wired connection between the HSG gateway and your switch/router/hub. Please check the LED status indication of these network devices.

## 2.6 Access Web Management Interface

The HSG gateway supports Web Management Interface (WMI) configuration. Upon the completion of hardware installation, the HSG gateway can be configured via web browsers with JavaScript enabled such as Internet Explorer version 6.0 and above or Firefox.

Default LAN interface IP address:

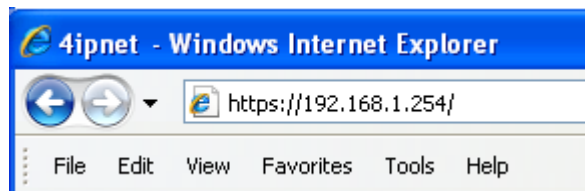
Private Zone with IP 192.168.1.254, no authentication is required for users.

Public Zone with IP 192.168.11.254, by default authentication is required for users.

*Note: The instructions below are illustrated with the administrator PC connected to LAN1.*

To access the web management interface, connect a PC to **LAN1 Port**, and then launch a browser. **Make sure you have set DHCP in TCP/IP of your PC to "Obtain an IP address automatically"**. The default gateway IP address is the default gateway IP address of Private Zone: "192.168.1.254".

Next, enter the gateway IP address of the HSG gateway at the address field. The default gateway IP address of **LAN1 Port** is "**https://192.168.1.254**" ("**https**" is used for a secured connection).



The administrator login page will appear. Enter "**admin**", the default username, and "**admin**", the default password, in the **User Name** and **Password** fields. Click **LOGIN** to log in.



After a successful login, a “Home” page with four main buttons will appear on the screen.



**Caution:**

If you can't get to the login screen, the reasons may be: (1) The PC is set incorrectly so that the PC can't obtain the IP address automatically from the LAN port; (2) The IP address and the default gateway are not under the same network segment. Please set your PC with a static IP address such as 192.168.1.xx in your network and then try it again.

## 3 Incorporate HSG gateway to the Network

### 3.1 Network Requirement

In the general network environment, the main role of the HSG gateway is to manage all the network access from internal network to Internet. Thus, the first step is to prepare an Internet connection from your ISP (Internet Service Provider) and connect it to the WAN port of the HSG gateway.

### 3.2 Configure WAN Port

There are 3 connection types for the WAN Port: **Static**, **Dynamic** and **PPPoE**. These connection types are enough to support most ISPs.

Now, let us discuss how to configure the WAN port. Go to: **System >> WAN**.

The screenshot displays the configuration interface of the HSG gateway. At the top, there are five main menu buttons: System, Users, Network, Utilities, and Status. Below these, a sub-menu bar includes General, WAN, WAN Traffic, IPv6, LAN Port Mapping, Service Zones, and Layer 2 Firewall. The 'WAN' tab is selected, and the breadcrumb path 'Main Menu > System > WAN' is shown. The main content area is titled 'WAN Interface Setting' and contains a table with two columns: 'WAN' and configuration options. The 'WAN' column has the text 'WAN'. The configuration options include radio buttons for 'Static (Use the following IP settings)', 'Dynamic (IP settings assigned automatically)', 'PPPoE', and 'PPTP'. The 'Dynamic' option is selected, and there is a 'Renew' button next to it. Below the 'Dynamic' option, there is a checkbox for 'Learn DNS Server Address During Negotiation.' and two input fields for 'Preferred DNS Server:' and 'Alternate DNS Server:'. The 'PPPoE' option is also visible.

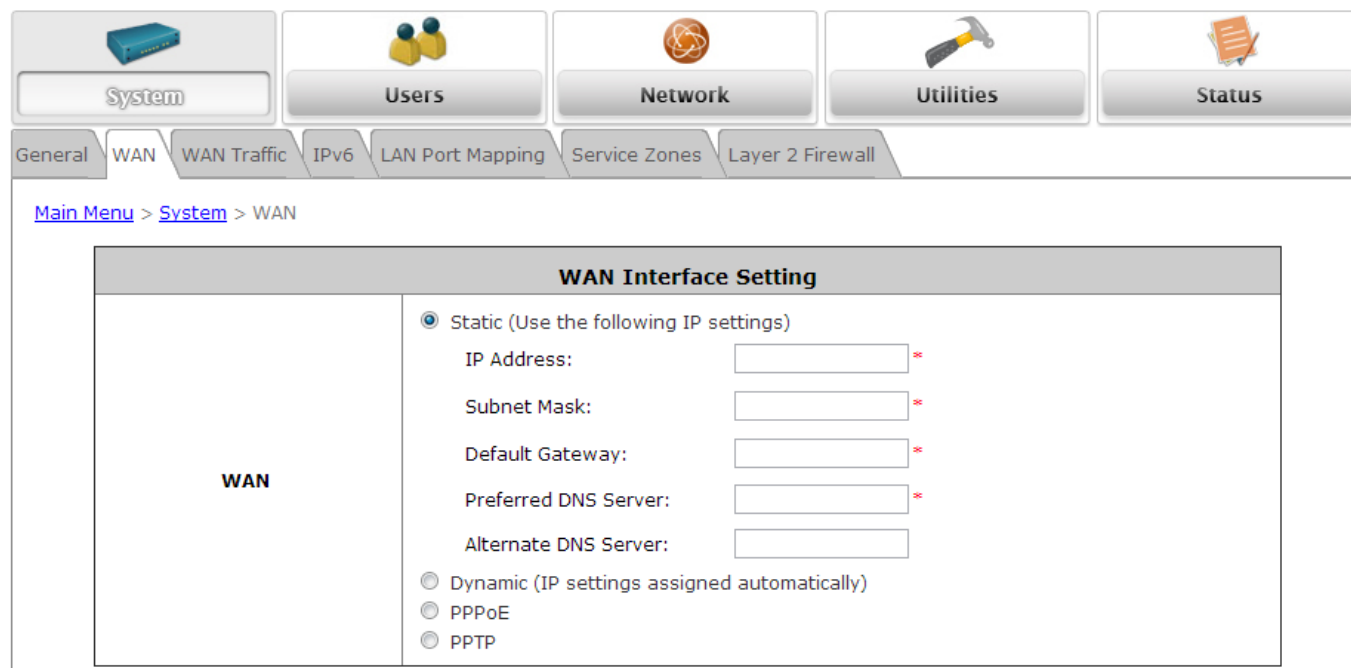
WAN Interface Setting	
WAN	<p><input type="radio"/> Static (Use the following IP settings)</p> <p><input checked="" type="radio"/> Dynamic (IP settings assigned automatically) <a href="#">Renew</a></p> <p><input type="checkbox"/> Learn DNS Server Address During Negotiation.</p> <p>Preferred DNS Server: <input type="text"/></p> <p>Alternate DNS Server: <input type="text"/></p> <p><input type="radio"/> PPPoE</p> <p><input type="radio"/> PPTP</p>

The parameters related to each connection method are described in the following page.

### 3.2.1 Static IP

**Static:** Manually specifying the IP address of the WAN Port. The fields with red asterisks are mandatory.

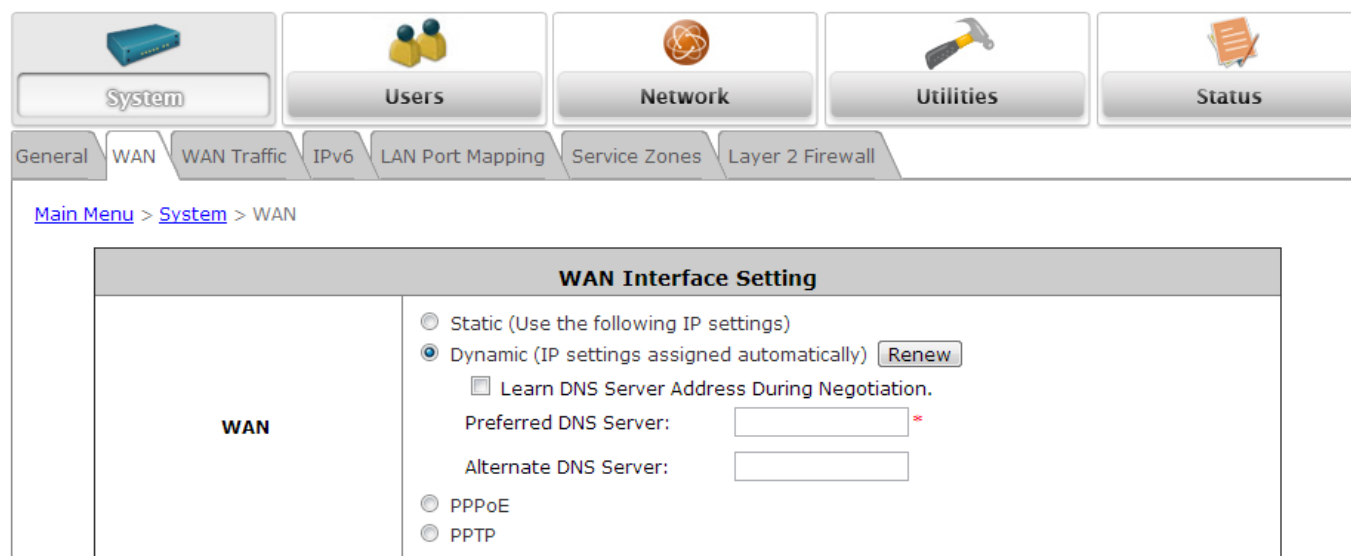
- **IP Address:** The IP address of the WAN port.
- **Subnet Mask:** The subnet mask of the WAN port.
- **Default Gateway:** The gateway of the WAN port.
- **Preferred DNS Server:** The primary DNS Server of the system.
- **Alternate DNS Server:** The substitute DNS Server of the system. This is an optional field.



The screenshot shows the 4ipnet web interface. At the top, there are five main tabs: System, Users, Network, Utilities, and Status. Below these are sub-tabs for General, WAN, WAN Traffic, IPv6, LAN Port Mapping, Service Zones, and Layer 2 Firewall. The 'WAN' sub-tab is selected. The breadcrumb trail reads 'Main Menu > System > WAN'. The main content area is titled 'WAN Interface Setting'. On the left, there is a 'WAN' label. On the right, the 'Static (Use the following IP settings)' option is selected with a radio button. Below this, there are five input fields: 'IP Address:', 'Subnet Mask:', 'Default Gateway:', 'Preferred DNS Server:', and 'Alternate DNS Server:'. Each of these fields has a red asterisk (\*) to its right, indicating they are mandatory. Below the input fields, there are three unselected radio button options: 'Dynamic (IP settings assigned automatically)', 'PPPoE', and 'PPTP'.

### 3.2.2 Dynamic


**Dynamic:** It is only applicable for the network environment where the DHCP server is available upstream of the system. Click the **Renew** button to get an IP address automatically.





The screenshot shows the 4ipnet web interface with the same navigation structure as the previous one. The 'WAN' sub-tab is selected. The breadcrumb trail reads 'Main Menu > System > WAN'. The main content area is titled 'WAN Interface Setting'. On the left, there is a 'WAN' label. On the right, the 'Dynamic (IP settings assigned automatically)' option is selected with a radio button. To the right of this option is a 'Renew' button. Below this, there is a checkbox labeled 'Learn DNS Server Address During Negotiation.' which is currently unchecked. Below the checkbox, there are two input fields: 'Preferred DNS Server:' and 'Alternate DNS Server:'. The 'Preferred DNS Server:' field has a red asterisk (\*) to its right, indicating it is mandatory. Below the input fields, there are two unselected radio button options: 'PPPoE' and 'PPTP'.


### 3.2.3 PPPoE


**PPPoE:** When selecting PPPoE to connect to the network, please set the “**Username**”, “**Password**”, “**MTU**” and “**Clamp MSS**”. There is a **Dial on demand** function under PPPoE. If this function is enabled, a **Maximum Idle Time** slot will be available for inputting a value. When the idle time is reached, the system will automatically disconnect itself.

  
**System**

  
**Users**

  
**Network**

  
**Utilities**

  
**Status**

General

WAN

WAN Traffic

IPv6

LAN Port Mapping

Service Zones

Layer 2 Firewall


[Main Menu](#) > [System](#) > WAN


**WAN Interface Setting**


<b>WAN</b>	<div style="margin-bottom: 10px;"> <input type="radio"/> Static (Use the following IP settings)  <input type="radio"/> Dynamic (IP settings assigned automatically)  <input checked="" type="radio"/> PPPoE                 </div> <div style="margin-bottom: 10px;">                     Username: <input style="width: 150px;" type="text"/> *                 </div> <div style="margin-bottom: 10px;">                     Password: <input style="width: 150px;" type="password"/> *                 </div> <div style="margin-bottom: 10px;">                     MTU: <input style="width: 50px; text-align: center;" type="text"/> 1492 bytes *(Range:1000~1492)                 </div> <div style="margin-bottom: 10px;">                     Clamp MSS: <input style="width: 50px; text-align: center;" type="text"/> 1350 bytes *(Range:980~1400)                 </div> <div style="margin-bottom: 10px;">                     Dial on Demand: <input type="radio"/> Enable <input checked="" type="radio"/> Disable                 </div> <div style="margin-bottom: 10px;"> <input type="checkbox"/> Learn DNS Server Address During Negotiation.                 </div> <div style="margin-bottom: 10px;">                     Preferred DNS Server: <input style="width: 100px;" type="text"/> *                 </div> <div style="margin-bottom: 10px;">                     Alternate DNS Server: <input style="width: 100px;" type="text"/> </div> <div style="margin-bottom: 10px;"> <input type="radio"/> PPTP                 </div>
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### 3.2.3 PPTP


**PPTP:** Although not a popular method, PPTP protocol for dialup connections is adapted by some ISPs (in European Countries). Your PPTP ISP will issue you an account with a password as well as the PPTP server address.

  
**System**

  
**Users**

  
**Network**

  
**Utilities**

  
**Status**

General

WAN

WAN Traffic

IPv6

LAN Port Mapping

Service Zones

Layer 2 Firewall


[Main Menu](#) > [System](#) > WAN


**WAN Interface Setting**


<b>WAN</b>	<div style="margin-bottom: 5px;"> <input type="radio"/> Static (Use the following IP settings)           <input type="radio"/> Dynamic (IP settings assigned automatically)           <input type="radio"/> PPPoE           <input checked="" type="radio"/> <b>PPTP</b> </div> <div style="margin-bottom: 5px;"> <div style="display: flex; justify-content: space-between;"> <div>Type</div> <div> <input type="radio"/> Static    <input checked="" type="radio"/> <b>DHCP</b> </div> </div> <div style="display: flex; justify-content: space-between;"> <div>PPTP Server IP Address:</div> <div><input type="text"/></div> <div style="color: red;">*</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Username:</div> <div><input type="text"/></div> <div style="color: red;">*</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Password:</div> <div><input type="text"/></div> <div style="color: red;">*</div> </div> <div style="display: flex; justify-content: space-between;"> <div>PPTP Connection ID/Name:</div> <div><input type="text"/></div> </div> <div style="display: flex; justify-content: space-between;"> <div>Dial on Demand:</div> <div> <input type="radio"/> Enable    <input checked="" type="radio"/> <b>Disable</b> </div> </div> <div style="display: flex; justify-content: space-between;"> <div><input type="checkbox"/> Learn DNS Server Address During Negotiation.</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Preferred DNS Server:</div> <div><input type="text"/></div> <div style="color: red;">*</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Alternate DNS Server:</div> <div><input type="text"/></div> </div> </div>
------------	--


## 3.3 Internet Connection Detection


To configure Internet Connection Detection, go to: **System >> WAN Traffic**.

  
System

  
Users

  
Network

  
Utilities

  
Status

General

WAN

WAN Traffic

IPv6

LAN Port Mapping

Service Zones

Layer 2 Firewall

[Main Menu](#) > [System](#) > WAN Traffic

WAN Traffic Settings		
Available Bandwidth on WAN Interface	<input checked="" type="checkbox"/> Enable Bandwidth limits on WAN	
	Uplink	<input type="text" value="1000000"/> Kbps <small>*(Range: 10-1000000)</small>
	Downlink	<input type="text" value="1000000"/> Kbps <small>*(Range: 10-1000000)</small>
WAN Connection Detection	Target for detecting Internet connection	
	IP/Domain Name	<input type="text"/>
	IP/Domain Name	<input type="text"/>
	IP/Domain Name	<input type="text"/>
	<input type="checkbox"/> Warning of Internet Disconnection	

- **Internet Connection Detection:** When this function is enabled, system will try to access these IP/Domain addresses, if system can reach these IP/Domain addresses, it means that the outbound Internet connection is in normal state. On the other hand, there is a textbox available for the administrator to enter a message reminder. This reminder will appear on clients' screens when Internet connection is down.



## 3.4 WAN Bandwidth Control

To configure WAN Bandwidth Control, go to: **System >> WAN Traffic**.

The screenshot shows the 4ipnet web interface. At the top, there are five main menu buttons: System (selected), Users, Network, Utilities, and Status. Below these are sub-menu tabs: General, WAN, WAN Traffic (selected), IPv6, LAN Port Mapping, Service Zones, and Layer 2 Firewall. The breadcrumb trail reads: [Main Menu](#) > [System](#) > WAN Traffic.

The main configuration area is titled "WAN Traffic Settings". It contains two main sections:

WAN Traffic Settings		
Available Bandwidth on WAN Interface	<input checked="" type="checkbox"/> Enable Bandwidth limits on WAN	
	Uplink	<input type="text" value="1000000"/> Kbps <small>*(Range: 10-1000000)</small>
	Downlink	<input type="text" value="1000000"/> Kbps <small>*(Range: 10-1000000)</small>
WAN Connection Detection	Target for detecting Internet connection	
	IP/Domain Name	<input type="text"/>
	IP/Domain Name	<input type="text"/>
	IP/Domain Name	<input type="text"/>
<input type="checkbox"/> Warning of Internet Disconnection		

The feature gives administrators control over the entire system's traffic on the WAN interface. These parameters set here should not exceed the real bandwidth provided by your ISP. For example, if your xDSL is 8Mbps/640kbs, you may input values equal to or less than the speed here.

### Available Bandwidth on WAN Interface:





- **Uplink:** It specifies the maximum uplink bandwidth that can be shared by clients of the system.
- **Downlink:** It specifies the maximum downlink bandwidth that can be shared by clients of the system.

## 3.5 What is a Service Zone

To configure a Zone, go to: **System >> Service Zones**.

A *Zone* is a logical network area that covers wired or wireless networks, or both of them. By associating it with a unique ESSID of a Zone, wireless network is divided into different logical zones. Clients attempting to access the resources within a Zone will be controlled based on the access control profile of that Zone, such as authentication, security features, wireless encryption methods, traffic control, etc.

There are four Zones that can be utilized by the HSG gateway – Private Zone, Public Zone, Service Zone 2 (Public) and Service Zone 3 (Public), as shown in the table below. Private Zone means clients are not required to be authenticated before using the network service. However, clients in Public Zone are required to obtain authentication before using the service.

Service Zone Settings						
Service Zone Name	Applied Policy	IP Address	Network Alias	DHCP Pool	LAN Port Mapping	Details
	Default Authen Option	IPv6 Address			Status	
Private	Policy 1	192.168.1.254	N/A	192.168.1.1 ~ 192.168.1.100		<a href="#">Configure</a>
	Disabled	N/A			Enabled	
Public	Policy 1	192.168.11.254	N/A	192.168.11.1 ~ 192.168.11.100		<a href="#">Configure</a>
	Server 1	N/A			Enabled	
SZ2	Policy 1	172.22.0.254	N/A	172.22.0.1 ~ 172.22.0.100		<a href="#">Configure</a>
	Server 1	N/A			Disabled	
SZ3	Policy 1	192.168.13.254	N/A	192.168.13.1 ~ 192.168.13.100		<a href="#">Configure</a>
	Server 1	N/A			Disabled	

- **Service Zone Name:** Mnemonic name of the Zone.
- **Applied Policy:** Current Policy that is applied to Zone.
- **Default Authen Option:** Default authentication method/server that is used within the Zone.
- **IP/IPv6 address:** Shows the LAN IP address. IPv6 is support and can be configured from the IPv6 tab.
- **Network Alias:** Shows the IP address that bridges to different subnets configured in the Network Alias List.
- **DHCP Pool:** Shows the range of LAN IP address which clients are assigned to get from DHCP.
- **LAN Port Mapping:** Each physical LAN port can be set individually to map to a specific zone, and can be

configured from the LAN Port Mapping tab (refer to 3.5.1).

- **Status:** Shows the Private/Public Zone mappings to the physical LAN ports.
- **Details:** Configurable, detailed settings for each Zone.

Click the **Configure** button to configure each Zone: **Basic Settings**, **Authentication Settings**, **Wireless Settings**, and **WDS Settings (Public Zone only)**.

### 3.5.1 Port Role Assignment

The HSG gateway supports four zones, Private, Public, Service Zone 2 (Public), and Service Zone 3 (Public). In the Private Zone, authentication is not required to access the network (disabled by default), whether it is via wired and wireless connection. In the Public Zones, the “**Authentication Required for Zone**” option is enabled by default, so clients have to be authenticated successfully before surfing the Internet.

There are two types of deployment mode for networks attached to the LAN ports of the WHG Controller: Port-Based mode and Tag-Based mode.

Configuration Path: **Main Menu >> System >> LAN Ports**

#### Port-Based Service Zone

Port-Based mode operates with the principle that each physical LAN port can be mapped to an enabled Service Zone or disabled from providing service. Operating under port based mode therefore means the maximum amount of Service Zones available to actually provide service is determined by the number of LAN ports on the Hotspot Gateway.

General WAN WAN Traffic IPv6 LAN Port Mapping Service Zones Layer 2 Firewall

[Main Menu](#) > [System](#) > Service Zone Port Role

### LAN Ports and Service Zone Mapping

Select the mode for Service Zone ☒ Port-Based  
☐ Tag-Based

Specify a desired Service Zone for each LAN Port:

Privat	Privat	Public	Public
LAN1	LAN2	LAN3	LAN4

## Tag-Based Service Zone

Tag-Based operation mode operates under the principle that different Service Zones are identified by VLAN ID. This means that Tag-Based operation allows each physical LAN port to accept traffic for any enabled Service Zones – Traffic handling will be processed internally according to the VLAN ID traffic packets carry.

General WAN WAN Traffic IPv6 LAN Port Mapping Service Zones Layer 2 Firewall

[Main Menu](#) > [System](#) > Service Zone Port Role

### LAN Ports and Service Zone Mapping

Select the mode for Service Zone ☐ Port-Based  
☒ Tag-Based

**Notice: Under "Tag-Based" mode, Service Zones will be distinguished by VLAN tags, instead of physical LAN ports.**

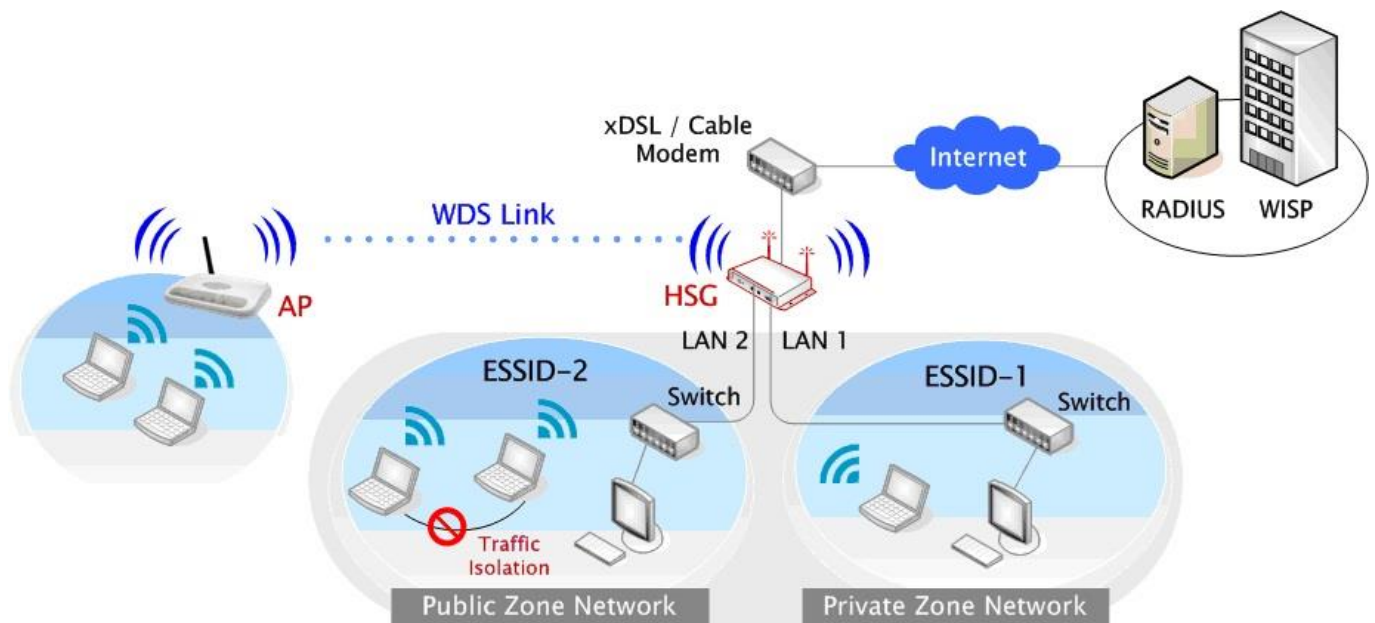
Privat	Privat	Public	Public
LAN1	LAN2	LAN3	LAN4

### Note:

System's WMI can also be accessed via WAN port as long as the administrator uses an IP address listed on the **Management IP Address List** (Go to *System >> General >> Management IP Address List*). If both WAN and LAN ports are unable to reach the WMI, please use console interface to resolve this issue.

### 3.5.2 Planning Your Internet Network

HSG gateway supports four zones, Private, Public, Service Zone 2 and Service Zone 3. In the Private Zone, authentication is not required to access the internet (disabled by default) via wired and wireless. In the Public Zones, by default the **“Authentication Required for Zone”** option is enabled, so clients are required to be authenticated successfully before surfing the Internet. Administrator can access the Web Management Interface (WMI) of the HSG through the wired LAN port. Note that Public Zones SZ2 and SZ3 are disabled by default and can be enabled if required.



### 3.5.3 Configure Zone Network

To configure Zone network; go to: **System >> Service Zone**. Click the button **Configure** for Private zone for further configuration. The parameter descriptions of Basic Settings for all four Zones are the same. The wireless settings under each zone will be covered in the next section.

General
WAN
WAN Traffic
IPv6
LAN Port Mapping
Service Zones
Layer 2 Firewall

[Main Menu](#) > [System](#) > [Service Zone](#) > Service Zone Configuration

Basic Settings		
Service Zone Status	Enable	
Service Zone Name	Private	
Network Interface	Operation Mode	<input checked="" type="radio"/> NAT <input type="radio"/> Router
	IP Address	192.168.1.254 *
	Subnet Mask	255.255.255.0 *
	Network Alias List	<a href="#">Configure</a>
DHCP Server	Enable DHCP Server	<input type="button" value="Configure"/>
	DHCP Server Configuration	<input type="button" value="Configure"/>
	Reserved IP Address List	<input type="button" value="Configure"/>
	DHCP Lease Protection	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

General
WAN
WAN Traffic
IPv6
LAN Port Mapping
Service Zones
Layer 2 Firewall

[Main Menu](#) > [System](#) > [Service Zone](#) > [Service Zone Configuration](#) > DHCP Configuration

DHCP Server Configuration for Service Zone Private		
DHCP Pool 1	Start IP Address	192.168.1.1 *
	End IP Address	192.168.1.100 *
	Preferred DNS Server	192.168.1.254 *
	Alternate DNS Server	
	Domain Name	domain.com
	WINS Server	
	Lease Time	1440 * 2 minutes ~ 10080 minutes (7 days)
	Ignore Client Name	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
DHCP Pool 2	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	

- **Network Interface:**
  - **Operation Mode:** Contains **NAT** mode and **Router** mode. When NAT mode is chosen, service zone runs in NAT mode. When Router mode is chosen, this zone runs in Router mode.
  - **IP Address:** The IP Address of this zone.
  - **Subnet Mask:** The subnet Mask of this zone.
- **DHCP Server:** Related information needed for setting up the DHCP Server is listed here. To further

configure the DHCP Server, click the button **Configure**. Please note that when “*Enable DHCP Relay*” is enabled, the IP address of clients will be assigned by an external DHCP server. The system will only relay DHCP information from the external DHCP server to downstream clients of this zone.

- **Start IP Address / End IP Address:** A range of IP addresses that the built-in DHCP server will assign to clients.  
**Note:** please change the Management IP Address List accordingly (at *System >> General >> Management IP Address List*) to permit the administrator to access the HSG admin page after the default IP address of the network interface is changed.
- **Preferred DNS Server:** The primary DNS server that is used by this Zone.
- **Alternate DNS Server:** The substitute DNS server that is used by this Zone.
- **Domain Name:** Enter the domain name for this zone.
- **WINS Server:** The IP address of the WINS (Windows Internet Naming Service) server if WINS server is applicable to this zone.
- **Lease Time:** This is the time period when the IP addresses issued from the DHCP server will be valid and available.
- **Reserved IP Address List:** Each zone can reserve up to 100 IP addresses from predefined DHCP range to prevent the system from issuing these IP addresses to downstream clients. The administrator can reserve a specific IP address for a special device with a certain MAC address.

## 4 Let Your Network Be a Wireless Network

### 4.1 System Wireless General Settings

To configure System's Wireless General Settings, go to: **System >> Service Zones**. Click the button **Configure** for **Private zone** for further configuration.

Wireless General Settings	
RF Card	RF Card1 ▾
Band	802.11a+802.11n ▾ <input type="checkbox"/> Pure 11n
Short Preamble	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Short Guard Interval	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Channel Width	20 MHz ▾
Channel	Auto ▾
Max Transmit Rate	Auto ▾
Transmit Power	Highest ▾
DTIM Period	1 (1-255ms)
ACK Timeout	0 (0-255ms)

#### Wireless General Settings:

- **RF Card (HSG320 / HSG327 only):** Select the RF card for configuration.
- **Band:** There are 4 modes to select, **802.11b** (2.4G, 1~11Mbps), **802.11g** (2.4G, 54Mbps), **802.11b+g**, and **802.11g+n** for the HSG260 and additional **802.11a** (5G, 54Mbps) and **802.11a+n** for the HSG320 / HSG327. Otherwise the administrator could enable the 'Pure 11n' to only utilize the 11n band.
- **Short Preamble:** The length of the CRC (Cyclic Redundancy Check) block for communication between the Access Point and roaming wireless adapters. Select **Enable** for **Short Preamble** or **Disable** for **Long Preamble**.
- **Short Guard Interval (802.11g+n and 802.11a+n only):** The guard interval is the space between symbols (characters) being transmitted to eliminate inter-symbol interference. With 802.11n, short guard interval is half of what it is used to be to increase throughput. Select **Enable** to use Short Guard Interval or **Disable** to use normal Guard Interval.
- **Channel Width (802.11g+n and 802.11a+n only):** For 802.11n, doubling channel bandwidth to 40 MHz is supported to enhance throughput.
- **Channel:** Select the appropriate channel from the drop-down menu to correspond with your network settings, for example, Channel 1-11 is available in North American and Channel 1-13 in Europe, or choose the default *Auto*.
- **Max Transmit Rate:** The default is **Auto**. Available range is from 1 to 300Mbps. The rate of data transmission should be set depending on the speed of the wireless network. Select from a range of



transmission speed or keep the default setting, **Auto**, to make the Access Point automatically use the fastest rate possible.

- **Transmit Power:** Keep the default setting, or select from range to make the Access Point use different transmit power as you wish.
- **DTIM Period:** Input the DTIM Interval that is generated within the periodic beacon at a specified frequency. Higher DTIM will let the wireless client save energy, but the throughput will be decreased/worsened.
- **ACK Timeout:** The time interval for waiting for the “acknowledgement (ACK) frame”. If the ACK is not received within the interval then the packet will be re-transmitted. Higher ACK Timeout interval will decrease the packet lost, but the throughput will be decreased/worsened.

## 4.2 Zone Wireless Settings

Each zone has its own VAP and corresponds to one SSID. In Private zone, it's VAP1 and the SSID is hidden by default, so public users cannot scan this SSID in the air, for privilege users who already know this SSID, they can manually associate to the SSID of Private zone. On the other hand, the SSID of VAP2 under Public zone by default is enabled with SSID Broadcast feature, allowing public users to scan this SSID in the air.

After wireless general settings are done, use the parameters in Wireless Settings under zone configuration to fine tune the wireless network under Private and Public Zone.

To configure Private Zone's Wireless Settings, go to: **System >> Service Zone**, click **Configure** for Private zone

Wireless Settings : VAP 1	
<b>Basic</b>	VAP Status : <input checked="" type="radio"/> Enable <input type="radio"/> Disable ESSID : <input type="text" value="HSG260-1"/> *
<b>Security</b>	Security Type : <input type="text" value="None"/> ▼
<b>Advanced</b>	Beacon Interval : <input type="text" value="100"/> (25-500ms) RTS Threshold : <input type="text" value="2346"/> (1-2346) Fragment Threshold : <input type="text" value="2346"/> (256-2346) Broadcast SSID : <input type="radio"/> Enable <input checked="" type="radio"/> Disable Station Isolation : <input type="radio"/> Enable <input checked="" type="radio"/> Disable WMM : <input checked="" type="radio"/> Enable <input type="radio"/> Disable IGMP Snooping : <input checked="" type="radio"/> Enable <input type="radio"/> Disable

### ➤ Wireless Settings: VAP1 (Wireless Settings Private Zone)

- **Basic:** Enable the VAP Status if you wish to provide wireless service under this zone. Assign an ESSID to VAP1 under Private Zone or use the default, the ESSID of Private Zone will not be broadcast and internal staff will need to associate to Private Zone's VAP1 manually.
- **Security:** Configure the wireless network under Private Zone with security encryption to prevent unauthorized wireless association if necessary. The supported encryption standards are WEP and WPA-PSK.
- **Advanced:** The parameters in Advanced are wireless settings that allow customization of data transmission, enhanced security and wireless roaming.

**Beacon Interval:** The entered amount of time indicates how often the beacon signal will be sent from the VAP. The default value is set at 100ms.

**RTS Threshold:** Enter a value between 1 and 2346. RTS (Request to Send) Threshold determines the packet size at which the system issues a request to send (RTS) before sending the frame to prevent hidden node problems. The RTS mechanism will be activated if the data size exceeds the value provided. A lower RTS Threshold setting can be useful in areas where many client devices are associating with the HSG or in areas where the clients are far apart and can detect only the HSG but not each other. The default value is set at 2346.

**Fragment Threshold:** Enter a value between 256 and 2346. The default value is 2346. Packet size larger than this threshold, will be fragmented (sent with several pieces instead of one chunk) before transmission. A smaller value results in smaller frames but allows a larger number of frames in transmission. A lower Fragment Threshold setting can be useful in areas where communication is poor or disturbed by a serious amount of radio interference.

**Broadcast SSID:** The administrator has the option of enabling or disabling the SSID for VAP1 which is the Private Zone. Default value is set at Disable where users will not be able to scan for the SSID.

**Station Isolation:** By enabling this function, all stations wirelessly associated to this zone are isolated from one another and can only communicate with the system.

**WMM:** The default is *Enable*. Wi-Fi Multimedia (WMM) is a Quality of Service (QoS) feature that prioritizes wireless data packets based on four access categories: voice, video, best effort, and background. Applications without WMM and applications that do not require QoS are assigned to the best-effort category, which receives a lower priority than that of voice and video. Therefore, WMM decides which data streams are more important and assigns them a higher traffic priority. This option works with WMM-capable clients only.

**IGMP Snooping:** IGMP is a multicast constraining mechanism which may flood the broadcast domain. This is effective for dense internet usage such as conventions or campuses.

Normally, we use VAP2, the VAP under Public Zone, to provide wireless service to public clients in a hotspot environment. Service Zones 2 and 3 may be enabled to support VAP3 and VAP4. To configure the Public Zones' Wireless Settings, go to: **System >> Service Zones**, click **Configure** for each respective zone.

Wireless Settings : VAP 2	
<b>Basic</b>	VAP Status : <input checked="" type="radio"/> Enable <input type="radio"/> Disable ESSID : <input type="text" value="HSG260-2"/> *
<b>Security</b>	Security Type : <input type="text" value="None"/> ▼
<b>Advanced</b>	Beacon Interval : <input type="text" value="100"/> (25-500ms) RTS Threshold : <input type="text" value="2346"/> (1-2346) Fragment Threshold : <input type="text" value="2346"/> (256-2346) Broadcast SSID : <input checked="" type="radio"/> Enable <input type="radio"/> Disable Station Isolation : <input type="radio"/> Enable <input checked="" type="radio"/> Disable WMM : <input checked="" type="radio"/> Enable <input type="radio"/> Disable IGMP Snooping : <input checked="" type="radio"/> Enable <input type="radio"/> Disable

➤ **Wireless Settings: VAP2 (Wireless Settings for Public Zone)**

- **Basic:** Enable the VAP Status if you wish to provide wireless service under this zone. Assign an ESSID for VAP2 under Public Zone or use default, the ESSID of Public Zone will be broadcasted in default settings to allow it to be scanned in the air.
- **Security:** Configure the wireless network under Public Zone with security encryption to prevent

unauthorized wireless association if necessary. The encryption standards supported are WEP and WPA-PSK.

- **Advanced:** The parameters in Advanced are wireless settings that allow customization of data transmission, enhanced security and wireless roaming.

**Beacon Interval:** The entered amount of time indicates how often the beacon signal will be sent from the VAP. The default value is set at 100ms.

**RTS Threshold:** Enter a value between 1 and 2346. RTS (Request to Send) Threshold determines the packet size at which the system issues a request to send (RTS) before sending the frame to prevent the hidden node problem. The RTS mechanism will be activated if the data size exceeds the value provided. A lower RTS Threshold setting can be useful in areas where many client devices are associating with the HSG or in areas where the clients are far apart and can detect only the HSG but not each other. The default value is set at 2346.

**Fragment Threshold:** Enter a value between 256 and 2346. The default value is 2346. A packet size larger than this threshold will be fragmented (sent with several pieces instead of one chunk) before transmission. A smaller value results in smaller frames but allows a larger number of frames in transmission. A lower Fragment Threshold setting can be useful in areas where communication is poor or disturbed by a serious amount of radio interference.

**Broadcast SSID:** Enable to broadcast VAP2's SSID in the air, Disable to hide VAP's SSID so that it cannot be scanned.

**Station Isolation:** By enabling this function, all stations wirelessly associated to this zone are isolated from one another and can only communicate with the system.

**WMM:** The default is *Enable*. Wi-Fi Multimedia (WMM) is a Quality of Service (QoS) feature that prioritizes wireless data packets based on four access categories: voice, video, best effort, and background. Applications without WMM and applications that do not require QoS are assigned to the best-effort category, which receives a lower priority than that of voice and video. Therefore, WMM decides which data streams are more important and assigns them a higher traffic priority. This option works with WMM-capable clients only.

**IGMP Snooping:** IGMP is a multicast constraining mechanism which may flood the broadcast domain. This is effective for dense internet usage such as conventions or campuses.

## 4.3 Zone Wireless Security

To configure Zone Wireless Security, go to: **System >> Service Zones**, click **Configure** for the respective Service Zones.

After the above configurations are finished, setting up the wireless security is very important to protect your wireless network. Below shows an example of VAP Settings for VAP1 and VAP2.

Wireless Settings : VAP 1	
<b>Basic</b>	VAP Status : <input checked="" type="radio"/> Enable <input type="radio"/> Disable ESSID : <input type="text" value="HSG260-1"/> *
<b>Security</b>	Security Type : <input type="text" value="None"/> ▼
<b>Advanced</b>	Beacon Interval : <input type="text" value="100"/> (25-500ms) RTS Threshold : <input type="text" value="2346"/> (1-2346) Fragment Threshold : <input type="text" value="2346"/> (256-2346) Broadcast SSID : <input type="radio"/> Enable <input checked="" type="radio"/> Disable Station Isolation : <input type="radio"/> Enable <input checked="" type="radio"/> Disable WMM : <input checked="" type="radio"/> Enable <input type="radio"/> Disable IGMP Snooping : <input checked="" type="radio"/> Enable <input type="radio"/> Disable

Wireless Settings : VAP 2	
<b>Basic</b>	VAP Status : <input checked="" type="radio"/> Enable <input type="radio"/> Disable ESSID : <input type="text" value="HSG260-2"/> *
<b>Security</b>	Security Type : <input type="text" value="None"/> ▼
<b>Advanced</b>	Beacon Interval : <input type="text" value="100"/> (25-500ms) RTS Threshold : <input type="text" value="2346"/> (1-2346) Fragment Threshold : <input type="text" value="2346"/> (256-2346) Broadcast SSID : <input checked="" type="radio"/> Enable <input type="radio"/> Disable Station Isolation : <input type="radio"/> Enable <input checked="" type="radio"/> Disable WMM : <input checked="" type="radio"/> Enable <input type="radio"/> Disable IGMP Snooping : <input checked="" type="radio"/> Enable <input type="radio"/> Disable

### ■ Security:

For each zone, administrators can set up the wireless security profile, it includes **WEP** and **WPA-PSK**.

#### ➤ WEP:

- **802.11 Authentication:** Select from **Open System** or **Shared Key**.
- **WEP Key Length:** Select from **64-bit**, **128-bit**, **152-bit** key length.
- **WEP Key Format:** Select from **ASCII** or **Hex** format for the WEP key.
- **WEP Key Index:** Select a key index from **1~4**. The WEP key index is a number that specifies which WEP key will be used for the encryption of wireless frames during data transmission.

- **WEP Keys:** Provide the pre-defined WEP key value; the system supports up to 4 sets of WEP keys.
- **802.1X:**
  - **Dynamic WEP:** Dynamic WEP is always enabled when the 802.1X option is selected to automatically generate WEP keys for encryption.
  - **WEP Key Length:** Select from **64-bit**, **128-bit** key length.
  - **Rekeying Period:** The time interval for the dynamic WEP key to be updated; the time unit is in seconds.
- **WPA-Personal:**
  - **Cipher Suite:** Select an encryption method from **WPA2**, **WPA2/WPA Mixed**.
  - **Pre-shared Key / Pass-phrase:** Enter the key value for the pre-shared key or pass-phrase.
  - **Group Key Update Period:** The time interval for the Group Key to be renewed; the time unit is in seconds.
- **WPA-Enterprise:**
  - **Cipher Suite:** Select an encryption method from **WPA2**, **WPA2/WPA Mixed**.
  - **Group Key Update Period:** The time interval for the Group Key to be renewed; the time unit is in seconds.

**NOTE**

When 802.1X or WPA-Enterprise is selected, the RADIUS Server points to the HSG Hotspot's own Local Authentication Database.

## 4.4 Wireless Layer 2 firewall

Go to **System >> Layer 2 Firewall**

The system provides an additional security feature, Layer2 Firewall, in addition to the standard wireless security. Layer2 Firewall offers a firewall function that is tailored specifically for Layer2 traffic, providing another choice of shield against possible security threats coming from/going to WLAN (AP interfaces); hence, besides firewall policies configured in Policies, this extra security feature will assist to mitigate possible security breach. This section provides information in the following functions: **Generic Firewall Rules, Predefined and Custom Service Protocols and Advanced.**

The screenshot displays the 4ipnet web interface. At the top, there are five main menu buttons: System (with a router icon), Users (with a group of people icon), Network (with a network icon), Utilities (with a hammer icon), and Status (with a document icon). Below these, a series of sub-menu tabs are visible: General, WAN, WAN Traffic, IPv6, LAN Port Mapping, Service Zones, and Layer 2 Firewall. The 'Layer 2 Firewall' tab is currently selected. Below the tabs, a breadcrumb trail reads 'Main Menu > System > Layer 2 Firewall'. The main content area is titled 'Layer 2 Firewall' and contains four links: 'Generic Firewall Rules', 'Predefined and Custom Service Protocols', and 'Advanced'.

Layer 2 Firewall
<a href="#">Generic Firewall Rules</a>
<a href="#">Predefined and Custom Service Protocols</a>
<a href="#">Advanced</a>

### 4.4.1 Generic Firewall Rules

You can choose to enable or disable the wireless Generic Firewall. This section provides an overview of firewall rules for the system's wireless interface; 6 default rules with up to a total 10 firewall rules are available for configuration.

Firewall Rules						
No.	Active	Action	Rule Name	Ether Type	Remark	Operation
1	<input checked="" type="checkbox"/>	Block	CDP	IEEE 802.3		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
2	<input checked="" type="checkbox"/>	Block	STP	IEEE 802.3		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
3	<input checked="" type="checkbox"/>	Block	GARP	IEEE 802.3		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
4	<input checked="" type="checkbox"/>	Block	RIP	IPv4		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
5	<input checked="" type="checkbox"/>	Block	HSRP	IPv4		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
6	<input checked="" type="checkbox"/>	Block	OSPF	IPv4		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
7	<input type="checkbox"/>	Block	rule 7	ANY		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
8	<input type="checkbox"/>	Block	rule 8	ANY		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
9	<input type="checkbox"/>	Block	rule 9	ANY		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
10	<input type="checkbox"/>	Block	rule 10	ANY		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>

(Total:10) [First](#) [Prev](#) [Next](#) [Last](#)



From the overview table, each rule is designated with the following field;

- **No.:** The numbering will decide the priority of which the system will carry out the available firewall rules in the tables.
- **Active:** Checking this field will mark the rule as active which means this rule will be enforced.
- **Action:** **Block** denotes a block rule; **PASS** denotes a pass rule.
- **Rule Name:** This is the denominated name of the rule.
- **EtherType:** It denotes the type of traffic subjected to this rule.
- **Remark:** It shows the additional reference information of this rule.
- **Operation:** 4 actions are available; **Edit** denotes to edit the rule details, **Move to** denotes to move the rule to a specified rule number, **Insert Before** denotes to insert a rule before the current rule, and **Delete** denotes to delete the rule.

>>To edit a specific rule,

**Edit** in **Operation** column of firewall rules will lead to the following page for detailed configuration. On this page, the rule can be edited from an existing rule for revision.

General
WAN
WAN Traffic
IPv6
LAN Port Mapping
Service Zones
Layer 2 Firewall

[Main Menu](#) > [System](#) > Layer 2 Firewall

Edit Filter Rule	
Rule Number	10
Rule Name	rule 10
Action for Matched Packets	<input type="radio"/> Pass <input checked="" type="radio"/> Block
Rule Remark	

Link Layer Configuration			
Ether Type	All		
Interface	<input checked="" type="radio"/> From <input type="radio"/> To VAP2		
Source		Destination	
MAC Address		MAC Address	
MAC Mask		MAC Mask	

- **Rule Number:** The numbering of this specific rule will decide its priority among available firewall rules on the list.
- **Rule name:** The rule name can be denominated here.
- **Action for Matched Packets:** The rule can be chosen to be **Block** or **Pass** packets that match the rule criteria.
- **Rule Remark:** The additional reference note of this rule can be specified here.
- **EtherType:** The drop-down list will provide the available types of traffics subject to this rule.
- **Interface:** For specifying the traffic direction (To or From VAP2) subjected to this rule.
- **IPv4 Service** (when EtherType is **IPv4**): Select the available upper layer protocols/services from the

drop-down list.

- **DSAP/SSAP** (when EtherType is **IEEE 802.3**): The value can be further specified for the fields in 802.2 LLC frame header.
- **SNAP Type** (when EtherType is **IEEE802.3**): The field can be used to indicate the type of encapsulated traffics.
- **Opcode** (when EtherType is **ARP**): This list can be used to specify the ARP Opcode in ARP header.
- **Source:** MAC Address/Mask indicates the source MAC; IP Address/Mask indicates the source IP address (when EtherType is **IPv4**); ARP IP/MAC & MASK indicate the ARP payload fields (when EtherType is **ARP**).
- **Destination:** MAC Address/Mask indicates the destination MAC; IP Address/Mask indicates the destination IP address (when EtherType is **IPv4**); ARP IP/MAC & MASK indicate the ARP payload fields (when EtherType is **ARP**).

When the configurations are made; please click **Apply** to let the firewall rule take effort.

>>To insert a specific rule,

**Inserting Before** in **Operation** column of firewall list will lead to the following page for detailed configuration with a rule ID for the rule currently being inserted.

General WAN WAN Traffic IPv6 LAN Port Mapping Service Zones Layer 2 Firewall

[Main Menu](#) > [System](#) > Layer 2 Firewall

Edit Filter Rule	
Rule Number	10
Rule Name	<input type="text" value="rule 10"/>
Action for Matched Packets	<input type="radio"/> Pass <input checked="" type="radio"/> Block
Rule Remark	<input type="text"/>

Link Layer Configuration			
Ether Type	<input type="text" value="All"/>		
Interface	<input checked="" type="radio"/> From <input type="radio"/> To VAP2		
Source		Destination	
MAC Address	<input type="text"/>	MAC Address	<input type="text"/>
MAC Mask	<input type="text"/>	MAC Mask	<input type="text"/>

>>To move a specific rule,

**Move to** in **Operation** column of firewall rules will lead to the following page for reordering confirmation. Click **OK** to save the changes made.

Move to No. 
 

Please make sure all the desired rules are checked as Active and click the Apply button below on the overview page.

General
WAN
WAN Traffic
IPv6
LAN Port Mapping
Service Zones
Layer 2 Firewall

[Main Menu](#) > [System](#) > Layer 2 Firewall

Generic Firewall

☒ Enable
☐ Disable

Firewall Rules						
No.	Active	Action	Rule Name	Ether Type	Remark	Operation
1	<input checked="" type="checkbox"/>	Block	CDP	IEEE 802.3		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
2	<input checked="" type="checkbox"/>	Block	STP	IEEE 802.3		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
3	<input checked="" type="checkbox"/>	Block	GARP	IEEE 802.3		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
4	<input checked="" type="checkbox"/>	Block	RIP	IPv4		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
5	<input checked="" type="checkbox"/>	Block	HSRP	IPv4		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>
6	<input checked="" type="checkbox"/>	Block	OSPF	IPv4		<a href="#">Edit</a> <a href="#">Move to</a> <a href="#">Insert Before</a> <a href="#">Delete</a>

## 4.4.2 Predefined and Custom Service Protocols

The administrator can add or delete firewall service protocols here; the services on this list will become available drop-down options to choose from in firewall rule (when EtherType is IPv4).

The first 27 entries are default services and the administrator can add any extra desired services.

These 27 default firewall services cannot be deleted but can be disabled.

General
WAN
WAN Traffic
IPv6
LAN Port Mapping
Service Zones
Layer 2 Firewall

[Main Menu](#) > [System](#) > Layer 2 Firewall

Service Protocols			
No.	Name	Description	Select All
1	ALL	ALL	<input type="checkbox"/>
2	ALL TCP	TCP, Source Port: 0~65535, Destination Port: 0~65535	<input type="checkbox"/>
3	ALL ICMP	ALL ICMP	<input type="checkbox"/>
4	FTP	TCP/UDP, Destination Port: 20~21	<input type="checkbox"/>
5	HTTP	TCP/UDP, Destination Port: 80	<input type="checkbox"/>
6	HTTPS	TCP/UDP, Destination Port: 443	<input type="checkbox"/>
7	POP3	TCP, Destination Port: 110	<input type="checkbox"/>
8	SMTP	TCP, Destination Port: 25	<input type="checkbox"/>
9	DHCP	UDP, Destination Port: 67~68	<input type="checkbox"/>
10	DNS	TCP/UDP, Destination Port: 53	<input type="checkbox"/>

Add
Delete

(Total: 27) [First](#) [Prev](#) [Next](#) [Last](#)

### 4.4.3 Advanced

Advanced Firewall Settings can be enabled to supplement the firewall rules, providing extra security enhancement against DHCP and ARP traffics traversing the available interfaces of the system.

General
WAN
WAN Traffic
IPv6
LAN Port Mapping
Service Zones
Layer 2 Firewall

[Main Menu](#) > [System](#) > Layer 2 Firewall

Advance	
<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
Advanced Firewall Settings	
<b>DHCP Snooping</b>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable Trust DHCP Server List <a href="#">Configure</a>
<b>ARP Inspection</b>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable Force DHCP <input type="radio"/> Enable <input checked="" type="radio"/> Disable Broadcast <input type="radio"/> Enable <input checked="" type="radio"/> Disable Static List <a href="#">Configure</a>

- **DHCP Snooping:** When enabled, DHCP packets will be validated against possible threats like DHCP starvation attack. In addition, the **Trusted DHCP List** (IP/MAC) can be used to specify legitimate DHCP servers to prevent rouge DHCP server.
- **ARP Inspection:** When enabled, ARP packets will be validated against ARP spoofing.
  - **Force DHCP** option when enabled, the AP only learns MAC/IP pair information through DHCP packets. Since devices configured with static IP address does not send DHCP traffic, any client with static IP address will be blocked from internet access unless its MAC/IP pair is listed and enabled on the **Static List**.
  - **Broadcast** can be enabled to let other AP (with L2 firewall feature) learn the trusted MAC/IP pairs to issue ARP requests.
  - **Static List** can be used to add MAC or MAC/IP pairs of devices that are trusted to issue ARP request. Other network nodes can still send their ARP requests; however, if their IP appears on the static list (with different MAC), their ARP requests will be dropped to prevent eavesdropping.

If any settings are made, please click **Apply** to save the configuration before leaving this page.

## 5 Who Can Access the Network

### 5.1 Type of Users

To configure Users, go to: **Users >> Authentication**.

This section is for administrators to pre-configure authentication servers for the entire system. Concurrently up to three servers can be selected and pre-configured for static user authentication. One server uses built-in LOCAL database while the other two servers use external RADIUS database. In addition, 'ONDEMAND' server can be configured for temporary user authentication.

Authentication Settings		
Auth Option	Auth Database	Postfix
<a href="#">Server 1</a>	LOCAL	local
<a href="#">Server 2</a>	RADIUS	radius1
<a href="#">Server 3</a>	RADIUS	radius2
<a href="#">On-demand User</a>	ONDEMAND	ondemand
<a href="#">FREE</a>	FREE	N/A

- **Authentication Settings:** There are four different authentication options in HSG gateways that use databases: **LOCAL**, **RADIUS1**, **RADIUS2**, **ONDEMAND** and **FREE**. **Local** and **On-demand** are built in databases with user credentials stored locally, and **RADIUS** is one of the most common external authentication databases. **FREE** is an access option that allows users to access networks with any specified identity token on the login page. Click on the Authentication Options to configure.
- **Auth Option:** Set a name for the authentication databases by using numbers (0~9), alphabets (a~z or A~Z), dash (-), underline (\_), space and dot (.) only. This name is used for the administrator to easily identify the authentication options such as HQ-RADIUS.
- **Postfix:** A postfix represents the authentication server in a complete username. For example, **user1@local** means that this user (user1) will be authenticated by the LOCAL authentication database.
- **Black List:** There are 5 sets of black lists provided by the system. A user account listed on the black list is not allowed to log into the system, the client's access will be denied. The administrator may select one (or None) black list from the drop-down menu and it will be applied to this specific authentication option.
- **Configure:** Click the **Configure** button to edit a specific authentication database for the server. For example, if you want to edit the *Local* authentication database, please click the **Configure** button for **Local**.

### 5.1.1 Local

Click the button **Configure** for **Local** for further configuration.

Local User Database Settings	
<a href="#">Local User List</a>	
<b>Account Roaming Out</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (Local user database will be used as authentication database for roaming out users.)
<b>802.1X Authentication</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (Local user database will be used as internal RADIUS database for 802.1X-enabled LAN devices, such as AP and switch.)

- Local User List:** It allows the administrator to view, add or delete local user accounts. The **Upload User** button is for importing a list of user accounts from a text file. The **Download User** button is for exporting all local user accounts into a text file. Clicking the hyperlink of a user account leads to a page for configuration.

Local User List					
Username	Password	Applied Group	MAC Address		<input type="button" value="Del All"/>  <a href="#">Delete</a>
		Account Status	Begin Date	End Date	
		Remark			
<a href="#">user1</a>	user1	Group 1			
		Valid			

(Total:1/500) [First](#) [Prev](#) [Next](#) [Last](#) Go to Page  (Page:1/1) Row per Page:

**Add User:** Click this button to enter the **Adding User(s) to the List** interface. Fill in the necessary information such as “**Username**”, “**Password**”, “**MAC Address**”, “**Remark**” and login “**Schedule**”. Select a desired **Group** to classify local users. Click **Apply** to complete adding the user(s). MAC address of a networking device can be bound with a local user as well. It means this user must log in to the system with a networking device (namely PC) that has the corresponding MAC address. That is, this user can not log in with other networking devices. An expiration time can be enabled for the user.

Adding User(s) to the List								
No.	Username*	Password*	MAC Address (XX:XX:XX:XX:XX:XX)	Group	Remark	Begin Date	End Date	Enable Expire Time
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>	Group 1 ▼	<input type="text"/>	<input type="text"/> Select	<input type="text"/> Select	<input type="checkbox"/>

- **Search:** Enter a keyword of a username or remark to be searched in the text file and click this button to perform the search. All usernames matching the keyword will be listed.

Local User List					
Username	Password	Applied Group	MAC Address		<input type="button" value="Del All"/>
		Account Status	Begin Date	End Date	
		Remark			
<a href="#">user1</a>	user1	Group 1			<a href="#">Delete</a>
		Valid			

(Total:1/500) [First](#) [Prev](#) [Next](#) [Last](#) Go to Page  (Page:1/1) Row per Page:

- **Del All:** Click this button to delete all the users at once or click **Delete** (hyperlinked) to delete a specific user individually.

**Edit User:** If in need of editing, click the desired user account on **Local User List** to enter the **User Profile** Interface for that particular user, and then modify or add information such as *Username*, *Password*, *MAC Address* (optional), *Applied Group* (optional) and *Remark* (optional). An expiration time can be Enabled and the Begin/End



Date can be selected. Click **Apply** to complete the modification.

Authentication Black List Group Policy Schedule Firewall QoS Specific Route Privilege Additional Control Operator

[Main Menu](#) > [Users](#) > [Authentication](#) > [Option](#) > [Local](#) > [Local User List](#) > Editing User

Editing Existing User Data	
Username	user01 *
Password	123 *
MAC Address	
Applied Group	Group 1 ▼
Remark	
Enable Expire Time	<input type="checkbox"/>
Begin Date	<input type="text"/> <input type="button" value="Select Date"/>
End Date	<input type="text"/> <input type="button" value="Select Date"/>

### 5.1.2 RADIUS

There are two RADIUS authentication databases for configuration. Click **Configure** for any one of **RADIUS** servers for further configuration. The RADIUS server sets the external authentication for user accounts. Enter the information concerning the primary server and/or the secondary server (the secondary server is not mandatory). The fields with red asterisks are necessary information. These settings will become effective immediately after clicking **Apply**.

External RADIUS Server Related Settings		
802.1X Authentication	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Username Format	<input checked="" type="radio"/> Leave Unmodified <input type="radio"/> Complete (e.g. user1@postfix) <input type="radio"/> Only ID (e.g. user1)	
NAS Identifier	<input type="text"/>	
NAS Port Type	19 *(Default: 19, Range: 0~35)	
Accounting Delay Time	0 *(Default: 0)	
Service Type	1 *(Default: 1, Range: 1~11)	
Class-Group Mapping	<input type="button" value="Configure"/>	
DM & CoA Settings	<input type="button" value="Configure"/>	
Acct Interim for users' IP changed	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (Acct Interim is sent when users' IP are changed if Enable)	
Failover between RADIUS Servers	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Attributes Priority	Follow Server's Setting <input type="button" value="v"/>	
	Standard RADIUS Attributes	
	Session Timeout	240 Minutes *(Range: 5-1440 mins)
	Idle Timeout	10 Minutes *(Range: 1-120 mins)
	Acct Interim Interval	15 Minutes *(Range: 1~120 mins, 0 is disable)
	WISPr Vendor Specific Attributes	
	Redirection URL	<input type="text"/>
	Billing Class Of Service	<input type="text"/>
	Session Terminate on Billing Time	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
	Session Terminate Time	Never
Retransmission Settings	Number of Retries	3 *(Default: 3)
	Timeout	6 *(Default: 6)
Primary RADIUS Server		
Authentication Server	<input type="text"/> *(Domain Name/IP Address)	
Authentication Port	<input type="text"/> *(Default: 1812)	
Authentication Secret Key	<input type="text"/> *	
Authentication Protocol	CHAP <input type="button" value="v"/>	
Accounting Service	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
Accounting Server	<input type="text"/> *(Domain Name/IP Address)	
Accounting Port	<input type="text"/> *(Default: 1813)	
Accounting Secret Key	<input type="text"/> *	
Secondary RADIUS Server		
Authentication Server	<input type="text"/> (Domain Name/IP Address)	
Authentication Port	<input type="text"/>	
Authentication Secret Key	<input type="text"/>	
Authentication Protocol	CHAP <input type="button" value="v"/>	
Accounting Service	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
Accounting Server	<input type="text"/> (Domain Name/IP Address)	
Accounting Port	<input type="text"/>	
Accounting Secret Key	<input type="text"/>	

➤ **External RADIUS Related Settings**

- **802.1X Authentication:** Enable /Disable 802.1X authentication for users authenticated through this Server.
- **Username Format:** Select the format of the user login information required to be sent to the external RADIUS Server. You may choose to send username in **Complete** (userID + Postfix), **Only ID** or **Leave Unmodified**. Please note that if Leave Unmodified option is selected, the system will send the input as is.
- **NAS Identifier:** This attribute is the string identifying the NAS originating the access request. System will send this value to the external RADIUS server, if the external RADIUS server needs this.
- **NAS Port Type:** Indicates the type of physical port the network access server is using to authenticate the user. System will send this value to the external RADIUS server, if the external RADIUS server needs this.
- **Account Delay Time:** This attribute adds flexibility for the HSG to process accounting requests in the time specified. Default is set at 0.
- **Service Type:** This attribute indicates the type of service the user has requested or the type of service to be provided, required for some RADIUS servers that only accepts specified service types.
- **Class-Group Mapping:** This function is to impose a Group on a RADIUS class attribute sent from the RADIUS server. When the clients classified by RADIUS class attributes log into the system via the RADIUS server, each client will be mapped to an assigned Group.

RADIUS Group Mapping - Server 2			
<input type="radio"/> Enable <input checked="" type="radio"/> Disable			
No.	Class Attribute Value	Group	Remark
1	<input type="text"/>	Group 1 ▼	<input type="text"/>
2	<input type="text"/>	Group 1 ▼	<input type="text"/>
3	<input type="text"/>	Group 1 ▼	<input type="text"/>
4	<input type="text"/>	Group 1 ▼	<input type="text"/>
5	<input type="text"/>	Group 1 ▼	<input type="text"/>

- **DM & CoA Settings:** This function allows administrator to assign users to receive Disconnect Messages / Change of Authorization from the server and sessions can be terminated instantly. Click **Configure** to enter the IP addresses of the users.
- **Attributes Priority:** This section shows the Standard RADIUS attributes which include Session Timeout, Idle Timeout and Acct Interim Interval; and WISPr Vendor Specific Attributes. These attributes are predetermined, and if needed, choose Overwrite Server's Setting to make changes.

➤ **Primary / Secondary RADIUS Server**

- **Authentication Server:** Enter the domain name or IP address of your RADIUS Server.
- **Authentication Port:** Enter the Port number used for authentication.
- **Accounting Port:** Enter the Port number used for accounting.
- **Authentication Secret Key:** Secret Key used for authentication.
- **Accounting Service:** Enable / Disable RADIUS accounting.
- **Accounting Server:** Enter the domain name or IP of your accounting server
- **Authentication Protocol:** Select Challenge-Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP).
- **Accounting Secret Key:** The key between the RADIUS server and the gateway to test the authenticity of the link.

### 5.1.3 On-Demand User

**On-demand User Server Configuration:** The administrator can configure this authentication method to create on-demand user accounts. This function is designed for hotspot owners to provide temporary users with free or paid wireless Internet access in the hotspot environment. Major functions include accounts creation, users monitoring list, billing plan and external payment gateway support.

Authentication Server - On-demand User	
General Settings	<a href="#">Configure</a>
Ticket Customization	<a href="#">Configure</a>
Ticket Template Customization	<a href="#">Configure</a>
Billing Plans	<a href="#">Configure</a>
External Payment Gateway	<a href="#">Configure</a>
On-demand Account Creation	<a href="#">Create</a>
On-demand Account Batch Creation	<a href="#">Create</a>
On-demand Account List	<a href="#">View</a>

#### 1) General Settings

This is the common setting for the On-demand User authentication option.

General Settings	
Postfix	ondemand
Remaining Volume Sync Interval	<input checked="" type="radio"/> 10min(s) <input type="radio"/> 15min(s) <input type="radio"/> 20min(s)
Terminal Server	<a href="#">Configure</a>
Expired Account Keep Days	15 *(1~30 days)
Out of Quota Account Keep Days	15 *(1~30 days)
Account Roaming Out	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (On-demand user database will be used as authentication database for roaming out users.)

- **Postfix:** The string of characters needed to be entered with the username during login.
- **Remaining Volume Sync Interval:** Select a desired interval for on-demand user quota update. The quota information, i.e. remaining time or remaining quota displayed on the on-demand user login success page

will be refreshed according to the time interval configured here.

- **Terminal Server:** Terminal Server Configuration is a list of serial-to-Ethernet devices that communicate with the system only; there is no need to go online or go through authentication process. Enter the device IP and the port number into the respective fields.

Status	Item	Server IP	Port	Location	Remark
	1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

- **Account Roaming Out:** When Account Roaming Out is enabled, a link will be available to define the client device authorized to roam by entering the IP address, Subnet Mask, and Secret Key.

## 2) Ticket Customization

On-demand account ticket can be customized here and previewed on the screen.

Ticket Customization	
<b>Currency</b>	<input checked="" type="radio"/> None <input type="radio"/> \$ USD <input type="radio"/> £ GBP <input type="radio"/> € EUR <input type="text"/> (Input other desired monetary unit, e.g. AU)
<b>WLAN ESSID</b>	<input type="text" value="HSG260"/>
<b>Wireless Key</b>	<input type="text"/>
<b>Receipt Header 1</b>	<input type="text" value="Welcome!"/>
<b>Receipt Header 2</b>	<input type="text"/>
<b>Receipt Header 3</b>	<input type="text"/>
<b>Receipt Footer 1</b>	<input type="text" value="Thank You!"/>
<b>Receipt Footer 2</b>	<input type="text"/>
<b>Receipt Footer 3</b>	<input type="text"/>
<b>Remark</b>	<input type="text"/>
<b>Background Image</b>	<input type="radio"/> None <input checked="" type="radio"/> Default Image <input type="radio"/> Uploaded Image <input type="button" value="Edit"/>
<b>Number of Tickets</b>	<input checked="" type="radio"/> 1 <input type="radio"/> 2

- **Currency:** Select the desired currency unit for charged internet access.
- **WLAN ESSID:** The entered name will be the ESSID of the Public Zone.



- **Wireless Key:** The wireless key configured in Public Zone Settings will be shown.
- **Receipt Header(Optional):** There are 3 receipt headers supported by the system. The entered content will be printed on the receipt.
- **Receipt Footer(Optional):** There are 3 receipt footers supported by the system. The entered content will be printed on the receipt.
- **Remark:** Enter additional information that will appear at the bottom of the receipt.
- **Background Image:** You can choose to customize the ticket by uploading your own background image for the ticket, or choose none. Click **Edit** to select the image file and then click **Upload**. The background image file size limit is 100 Kbytes. No limit for the dimensions of the image is set, but a 460x480 image is recommended.
- **Number of Tickets:** Enable this function to print duplicate receipts. Another Remark field will appear when the Number of Ticket is selected to 2 and the content will appear at the bottom of the 2<sup>nd</sup> duplicate receipt.
- **Preview:** Click **Preview**, the ticket will be shown, including the information of username and password with the selected background. You can also print the ticket here.

### 3) Ticket Template Customization

Administrators can customize contents on the On-demand tickets using this template.

Template Customization	
Image	<input type="button" value="Upload"/>
Type	Type I <input type="button" value="Restore"/> <small>(For Usage-Time with expiration time &amp; Volume)</small>
Template	<div> <div> <b>Font Size</b>  <input checked="" type="radio"/> Normal <input type="radio"/> Tall         </div> <div> <b>Parameters</b>  <div> <div>\$remain</div> <div><input type="button" value="Insert Parameters"/></div> </div> <div><small>(Ticket Serial Number)</small></div> </div> </div>
	<div> <div>SN: \$remain</div> <div> \$header  \$2header  \$3header </div> <div> -----  Username : \$username  Password : \$password  Quota : \$usage  Total Price : \$price  External ID : \$extid  -----  ESSID : \$wlan_ess_id  Wireless Key : \$wep_key  -----  Your first time login must be  done before \$expire_time  -----  The account is valid within  \$duration days  after your first login.  ----- </div> </div>
<input type="button" value="Preview"/>	
<input type="button" value="Apply"/> <input type="button" value="Clear"/>	



## 4) Billing Plans

Administrators can configure several billing plans. Click the **Edit** button to enter the page of **Editing Billing Plan**. Configure billing plans with desired account type, expiration date, price, etc. Click **Apply** to save the plan. Go back to the screen of **Billing Plans**, check the **Enable** checkbox or click **Select all**, and then click **Apply**, the plan(s) will be activated.

Billing Plans						
Plan	Account Type	Quota	Price	Enable <input type="checkbox"/>	Group	Function
1	Usage-time	2 hr(s) of connection time quota with expiration	2.99	<input checked="" type="checkbox"/>	Group 1	<a href="#">Edit</a>
2	Duration-time	Valid for 4 hour(s) elapsed time	4.99	<input checked="" type="checkbox"/>	Group 2	<a href="#">Edit</a>
3	Volume	100 Mbyte(s) of traffic volume quota	1.99	<input checked="" type="checkbox"/>	Group 3	<a href="#">Edit</a>
4	Hotel Cut-off-time	Valid until 23:00 the following day	3.99	<input checked="" type="checkbox"/>	Group 4	<a href="#">Edit</a>
5	N/A			<input type="checkbox"/>	Group 1	<a href="#">Edit</a>
6	N/A			<input type="checkbox"/>	Group 1	<a href="#">Edit</a>
7	N/A			<input type="checkbox"/>	Group 1	<a href="#">Edit</a>
8	N/A			<input type="checkbox"/>	Group 1	<a href="#">Edit</a>
9	N/A			<input type="checkbox"/>	Group 1	<a href="#">Edit</a>
0	N/A			<input type="checkbox"/>	Group 1	<a href="#">Edit</a>

- **Plan:** The number of the specific plan.
- **Type:** This is the type of plan, based on which it defines how the account can be used including Usage-time, Volume, Hotel Cut-off and Duration-time.
- **Quota:** The limit on how On-demand users are allowed to access the network.
- **Price:** The unit price charged for buying an account from this billing plan.
- **Enable:** Check the checkbox to activate the plan.
- **Group:** Users under this billing plan will be classified under this group. The default value is Group 1.
- **Function:** Click the **Edit** button to add one billing plan. For detailed information regarding on-demand accounts and billing plan configuration, please refer to **Appendix E, On-demand Account types & Billing Plan**.

## 5) External Payment Gateway

This section is for merchants to set up an external payment gateway to accept payments in order to provide wireless access service for end customers who wish to pay for the service online.

The options are **Authorize.Net**, **PayPal**, **SecurePay**, **WorldPay** or **Disable**. For detailed parameter descriptions please refer to **Appendix F, External Payment Gateways**.

External Payment Gateway				
<input type="radio"/> Authorize.Net	<input type="radio"/> PayPal	<input type="radio"/> SecurePay	<input type="radio"/> WorldPay	<input checked="" type="radio"/> Disable

## 6) On-demand Account Creation

After at least one billing plan is enabled, the administrator can generate single on-demand user accounts here. Click this to enter the On-demand Account Creation page. Click **Create** from the desired plan to create an on-demand account. The username and password of to-be-created on-demand account is configurable. Select **Manual created** in Username/Password Creation and administrator can enter a desired username and password for the on-demand account. In addition, an External ID such as student's school ID can be entered together with account creation.

After the account is created, you can click **Printout** to print a receipt which will contain the on-demand user's information, including the username and password. Moreover, you can click **Send to POS** to print a receipt by a POS device.

### Note:

If no Billing plan is enabled, accounts cannot be created by clicking **Create**. Please go back to Billing Plans to activate at least one Billing plan by clicking **Edit** and **Apply** the setting to activate the plan. The printer used by **Print** is a pre-configured printer connected to the administrator's computer.

On-demand Account Creation					
Plan	Account Type	Quota	Price	Status	Function
1	Usage-time	15 min(s) connection time quota with expiration	10.91	Enabled	Create
2	Usage-time	11 min(s) connection time quota	1	Enabled	Create
3	Hotel Cut-off-time	Valid until 12:00 the following day	5	Enabled	Create
4	Duration-time	Valid from 2010/07/14 12:00:00 till 2010/07/14 23:59:00	1	Enabled	Create
5	N/A	N/A	N/A	Disabled	Create
6	N/A	N/A	N/A	Disabled	Create
7	N/A	N/A	N/A	Disabled	Create
8	N/A	N/A	N/A	Disabled	Create
9	N/A	N/A	N/A	Disabled	Create
0	N/A	N/A	N/A	Disabled	Create

- **Plan:** The number of a specific plan.
- **Account Type:** Show account type of the plan in Usage-time. Duration-time or Hotel Cut-off.
- **Quota:** The total amount of time, interval or traffic volume for On-demand users to access the network. For Time users, it is the total time. For Volume users, it is the total amount of traffic.
- **Price:** For each plan, this is the unit price charged for an account.
- **Status:** Show the status in enabled or disabled.
- **Function:** Press **Create** for the desired plan; and 'Creating an On-demand Account' will appear for

creation.

On-demand Account Creation					
Plan	Account Type	Quota	Price	Status	Function
1	Usage-time	15 min(s) connection time quota with expiration	10.91	Enabled	Create
2	Usage-time	11 min(s) connection time quota	1	Enabled	Create
3	Hotel Cut-off-time	Valid until 12:00 the following day	5	Enabled	Create
4	Duration-time	Valid from 2010/07/14 12:00:00 till 2010/07/14 23:59:00	1	Enabled	Create



Creating an On-demand Account	
<b>Plan : Account Type</b>	2 : Usage-time
<b>Quota</b>	11 min(s) of connection time quota
<b>Account Creation</b>	System created ▼
<b>Account Activation</b>	First time login must be done within 1 hour(s)
<b>Total Price</b>	1
<b>Unit</b>	1 Units per ticket
<b>Group</b>	Group 1 ▼
<b>Reference</b>	<input type="text"/> Add a reference related to this account (for example, the customer's name)
<b>External ID</b>	<input type="text"/> Enter an external ID such as Library ID No.
Please confirm the information and press Create button to create an account.	

## 7) On-demand Account Batch Creation

After at least one billing plan is enabled, the administrator can generate multiple on-demand user accounts at once with batch creation. For potential hotspot operators who may wish to pre-generate guest accounts for sale, On-demand feature has a batch create functionality which allows the administrator or operator with access authority to On-demand page, to create multiple accounts for an enabled billing plan in batch, and send them to POS printer for generating physical ticket printout for sale.

Batch Creating On-demand Account	
<b>Plan : Account Type</b>	1 : Usage-time
<b>Quota</b>	1 day(s) of connection time quota with expiration
<b>Numbers</b>	<input type="text" value="1"/> Number of tickets to batch create
<b>Username/Password Creation</b>	Manual created ▼
<b>Username</b>	Prefix: <input type="text" value="4ip"/> *(A-z/0-9 and max length is 5) Serial Number: <input type="text" value="1"/> *(1~5 digits and max length is 5) Postfix: <input type="text" value="net"/> *(A-z/0-9 and max length is 5) *(Total length is less than 10)
<b>Password</b>	<input type="radio"/> Randomly <input type="radio"/> Same as username <input checked="" type="radio"/> Admin Assign <input type="text" value="4ipnet"/>
<b>Valid Period</b>	After activation, the account will be expired in 7 day(s)
<b>Total Price</b>	3.99
<b>Unit</b>	<input type="text" value="5"/> Number of units per ticket
<b>Group</b>	Group 1 ▼
Please confirm the information and press Create button to create accounts.	

- **Account Type:** Show account type of the plan in Usage-time, Duration-time or Hotel Cut-off.
- **Quota:** The total amount of time, interval or traffic volume for On-demand users to access the network.
- **Numbers:** The desired number of accounts to be created from the plan.
- **Username/Password Creation:** Usernames and passwords can be created randomly by system or self-created by administrator.
- **Username:** To manually create a username, the Prefix and Postfix can be chosen. The serial number increases at single increments when batch accounts are created.
- **Password:** Passwords are customizable and can be created randomly by system or self-created by administrator.
- **Valid Period:** Shows when the account will expire.
- **Total Price:** For each plan, this is the unit price charged for an account.
- **Unit:** Number of units of Quota per ticket
- **Group:** On-demand users can be allocated to a defined User Group when On-demand accounts are created.

The generated accounts may be downloaded for safe keeping, or sent to printer for batch printout.

#### 8) On-demand Account Creation by Quick Button (Available on HSG260)

The **Quick Button** located on the front panel of HSG260 is a quick On-demand account generation button. This button is designed to create On-demand accounts without the need to enter WMI. There should be a serial POS printer such as the PRT100 which is directly connected to the console port of HSG260.

When the administrator has properly connected a PRT100 POS printer to the console port, pressing this button will generate an On-demand account using billing plan no.1 and print out the account credentials via the POS printer.

Please note that the corresponding billing plan no. for this **Quick Print** button is always billing plan 1. Should the network administrator wish to configure different account types for generation, please modify billing plan no.1.

*\*Only supports normal font for ticket customization.*

## 9) On-demand Account List

All created On-demand accounts are listed and related information is also provided.

Authentication Black List Group Policy Schedule Firewall QoS Specific Route Privilege Additional Control Operator

Main Menu > Users > Authentication > On-demand User Server Configuration > On-demand Account List

Restore Accounts Backup Current Accounts Delete Expired Accounts Delete Out of Quota Accounts

Search

On-demand Account List							
Username	Password	Remaining Quota	Status	Group	Reference	External ID	Delete All
<a href="#">9829</a>	f6sk7zsd	1000 M byte(s)	Expired	Group 2			<a href="#">Delete</a>
<a href="#">383x</a>	n996nb5y	11 min(s)	Normal	Group 1			<a href="#">Delete</a>

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- **Search:** Enter a keyword of a username, External ID, or reference, to be searched in the text file and click this button to perform the search. All usernames, External ID, or reference, matching the keyword will be listed.
- **Username:** The login name of the account.
- **Password:** The login password of the account.
- **Remaining Quota:** The remaining time or volume, or the cut-off time that the account can continue to use to access the network.
- **Status:** The status of the account.
  - **Normal:** the account is not currently in use and has not exceeded the quota limit.
  - **Online:** the account is currently in use.
  - **Expired:** the account is not valid any more, even if there is remaining quota left.
  - **Out of Quota:** the account has exceeded the quota limit.
  - **Redeemed:** the account has been applied for account renewal.

- **External ID:** This is an additional information field combined with a unique account, for example the customer's name or social security number etc.
- **Reference:** Any other additional information, for example venue where the account is generated etc.
- **Delete All:** This will delete all the users at once.
- **Delete:** This will delete the users individually.

#### 10) Redeem On-demand Accounts



For Usage-time accounts, when the remaining quota is insufficient or if they are running out of quota, they can use the redeem function to extend their quota. After the user has got, or bought a new account, they just need to click the **Redeem** button in the login success page to enter Redeem Page, input the new account **Username** and **Password** and then click **Enter**. This new account's quota will be extended to the original account. However, the Redeem function can only be used with the same billing type, i.e. Volume accounts can only be redeemed with another Volume account and so on.

**Note:**

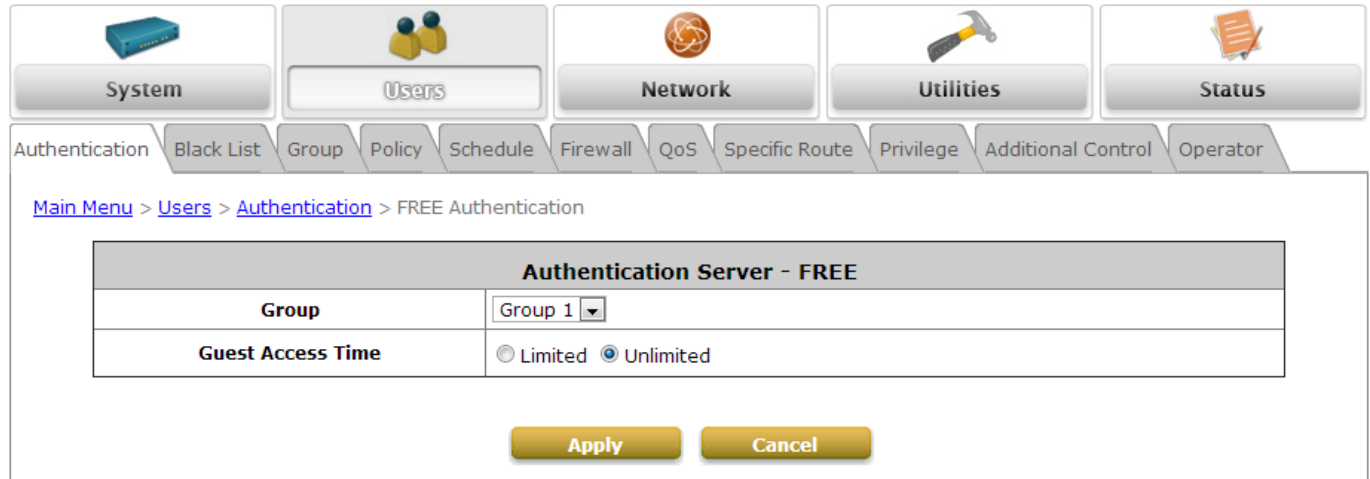
The maximum quota is 364dys 23hrs 59mins 59secs" even after redemption. If the redeemed amount exceeds this number, the system will automatically reject the redemption process.

**Note:**

Duration-time and Hotel Cut-off type do not support redemption function.



### 5.1.4 Free Authentication

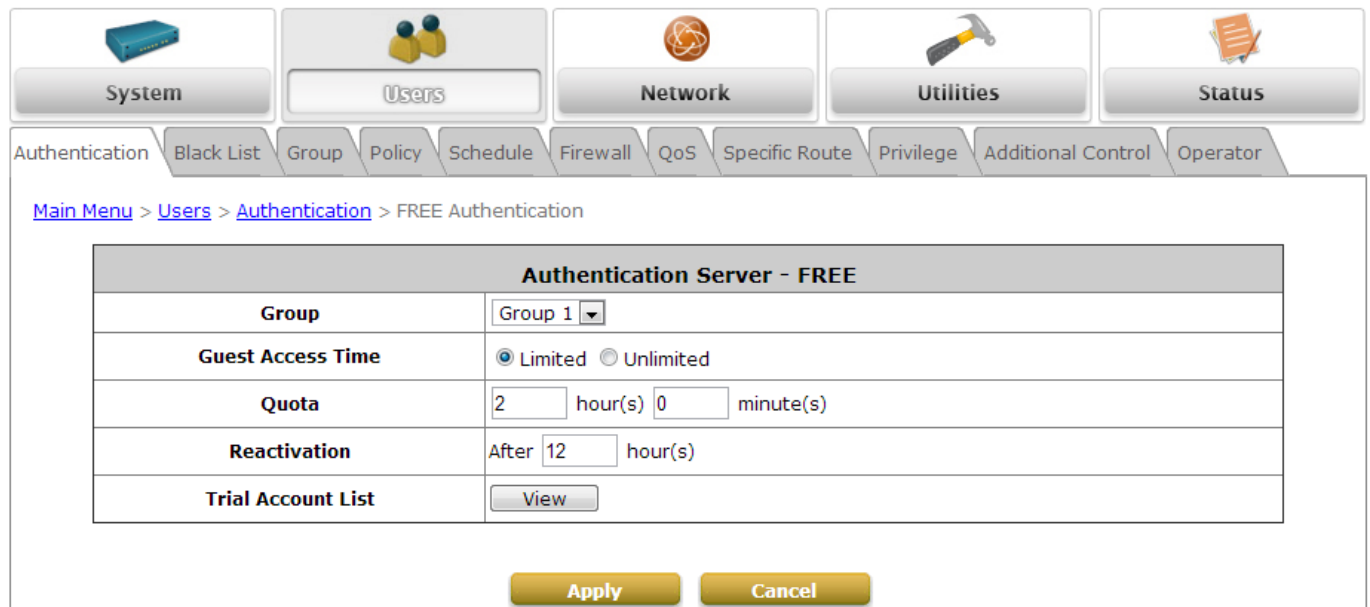


[Main Menu](#) > [Users](#) > [Authentication](#) > FREE Authentication

Authentication Server - FREE	
Group	Group 1 ▼
Guest Access Time	<input type="radio"/> Limited <input checked="" type="radio"/> Unlimited

Apply Cancel

When the Free Authentication option is **Enabled**, users will have an option of logging in with an email address without authentication. This can be activated under Service Zone Settings configurations. The constraints can be set specifically with the mapped Group profile. MAC addresses will be checked to avoid malicious use of free access.



[Main Menu](#) > [Users](#) > [Authentication](#) > FREE Authentication

Authentication Server - FREE	
Group	Group 1 ▼
Guest Access Time	<input checked="" type="radio"/> Limited <input type="radio"/> Unlimited
Quota	2 hour(s) 0 minute(s)
Reactivation	After 12 hour(s)
Trial Account List	View

Apply Cancel

When Guest Access Time is set to Limited, Administrator can choose to set the Quota and Reactivation Time. The server remembers the MAC address of the user. Hence the user can only get a new Free authentication account after the refresh time has been reached.

## 5.2 User Login

### 5.2.1 Default Authentication

There are different types of authentication databases (LOCAL, RADIUS and ONDEMAND) that are supported by the system. But authentication can only be set in the Public Zone.

A postfix is used to inform the system which authentication option is to be used for authenticating an account (e.g. Bob@local or Tim@radius1 etc.) when multiple options are concurrently in use. One of the authentication options can be assigned as default. For authentication assigned as default, the postfix can be omitted. For example, if "local" is the postfix of the default option, then user with username Bob can login as "Bob" without the need to type in "Bob@local".

Authentication Options	Auth Option	Auth Database	Postfix	Default	Enable
	<a href="#">Server 1</a>	LOCAL	local	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">Server 2</a>	RADIUS	radius1	<input type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">Server 3</a>	RADIUS	radius2	<input type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">On-demand User</a>	ONDEMAND	ondemand	<input type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">FREE</a>	FREE	N/A	<input type="radio"/>	<input type="checkbox"/>

### 5.2.2 Login with Postfix

For each authentication option, set a postfix that is easy to distinguish (e.g. Local) users according to different authentication servers. The acceptable characters are numbers (0~9), alphabet (a~z or A~Z), dash (-), underline (\_) and dot (.) within a maximum of 40 characters. All other characters are not allowed.

Beside the users managed by Default Authentication, all the other ones with different servers should log into the system with usernames containing postfixes to identify which authentication option they belong to.

The postfix can be set for each Authentication database by clicking the Auth Option.

### 5.2.3 An Example of User Login

Normally, users will be authenticated before they get network access through HSG gateway. This section presents the basic authentication process of end users. Please make sure that the HSG gateway is configured properly and the network-related settings are done.



1. Connect a client PC to Public Zone of HSG gateway. Open an Internet browser and try to connect to any website (in this example, we try to connect to www.google.com).
  - a) The default user login page will appear in the browser.



2. Enter the username and password (for example, we use a local user account: **test@local** here) and then click **Login**. If the **Remember Me** checkbox is checked, the browser will store the username and the password on the current computer in order to automatically login to the system at the next login. Then, click the **Login** button.

The **Remaining** button on the **User Login Page** is for on-demand users only; this is where they can check their Remaining quota.

3. Successful! The **Login Success Page** indicates that you are connected to the network and the Internet now!



## 6 *Restrain the Users*

### 6.1 Black List

To configure Black List, go to: **Users >> Black List**.

The administrator can add, delete, or edit the black list for user access control. User accounts that appear on the black list will be denied of network access. The administrator can use the pull-down menu to select the desired black list.

Black List Settings		
Select Black List	1:Blacklist1 ▼	
Name	Blacklist1	
User	Remark	<input type="button" value="Del All"/>

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- **Select Black List:** There are 5 black list profiles available for utilization.
- **Name:** Set the black list name and it will show on the pull-down menu above.
- **Add User(s):** Click the **Add User(s)** button to add users to the selected black list.

Adding User(s) to Blacklist1		
No.	Username	Remark
1	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>

After entering the usernames in the “**Username**” field and the related information in the “**Remark**” blank (not required), click **Apply** to add the users.

If a user needs to be removed from the black list, click the user’s “**Delete**” button and or use click **Del All** button to remove all users from the black list.

Black List Settings		
Select Black List	1:Blacklist1 ▾	
Name	Blacklist1	
User	Remark	Del All
blackuser		Delete

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Add User(s)

After the Black List editing is completed. You can select the Black List in each Authentication Server to make the list effective.

## 6.2 Group

To configure Group, go to: *Users >> Group*.

Users on the HSG can be classified into different groups, which can be assigned different Policies and Schedules. The HSG supports up to 5 user Groups.

Group Configuration - Group 1			
Select Group	Group 1 ▼		
Group Name	Group 1		
Remark			
Zone Permission Configuration & Policy Assignment - Group 1			
Zone Name	Enabled	Time Span 1	Time Span 2
		Schedule 1 ▼	Schedule 1 ▼
Service Zone : Private	<input checked="" type="checkbox"/>	Policy 1 ▼	Policy 1 ▼
Service Zone : Public	<input checked="" type="checkbox"/>	Policy 1 ▼	Policy 1 ▼

When the type of authentication database is **RADIUS**, the **Class-Group Mapping** function will be available to allow the administrator to assign a Group for a RADIUS class attribute; therefore, a Group will be mapped to a user of a RADIUS class attribute.

## 6.3 Policy

To configure Policy, go to: *Users >> Policy*.

The HSG supports multiple Policies, including one **Global Policy** and 5 individual **Policies**.

**Global Policy** is the system's universal policy and is applied to all clients unless the clients are bounded by another policy. Individual Policy can be defined and applied to different authentication server. A client logging in with this authentication server will be bound by the corresponding Policy. If no policy is applied to the authentication server, its users will be governed by the Global Policy.

### Global Policy

Global policy is the system's universal policy containing the **Firewall Profile**, **Specific Routes Profile (IPv4/IPv6)**, and **Privilege Profile**, which will be applied to all users unless the user has been regulated by another individual Policy.

Policy Configuration - Global Policy	
Select Policy	Global ▼
Firewall Profile	<input type="button" value="Configure"/>
Specific Route Profile	<input type="button" value="Configure"/>
Specific IPv6 Route Profile	<input type="button" value="Configure"/>
Privilege Profile	<input type="button" value="Configure"/>

- **Select Policy:** Select a desired policy profile to configure.
- **Firewall Profile:** Global policy and policy 1 ~ 5 all have a firewall service list and a set of firewall profiles which is composed of firewall rules.
- **Specific Route Profile:** When Specific Routes are configured here, all clients applied with this policy will access the specific destination through these gateway settings.
- **Specific IPv6 Route Profile:** The routing rules to be applied to users using IPv6 under this policy may be configured here.
- **Privilege Profile:** Enable or Disable Users' privilege to change password. Administrator can set the maximum sessions per user here.

### Policy 1 ~ Policy 5

Beside **Global Policy**, **Policy 1 to Policy 5**, each consists of access control profiles that can be respectively configured and applied to a certain authentication server or user.

Policy Configuration - Policy 1		
Select Policy	Policy 1 ▼	
Firewall Profile	Firewall 1 ▼	<input type="button" value="Configure"/>
QoS Profile	Traffic 1 ▼	<input type="button" value="Configure"/>
Specific Route Profile	Specific Route 1 ▼	<input type="button" value="Configure"/>
Privilege Profile	Privilege 1 ▼	<input type="button" value="Configure"/>

- **Select Policy:** Select a desired policy profile to configure.
- **Firewall Profile:** Each Policy has a firewall service list and a set of firewall profiles consisting of firewall rules.
- **QoS Profile:** QoS profile defines the traffic class for the users governed by this Policy.
- **Specific Route Profile:** The default gateway of a desired IP address can be defined in a policy. When Specific Routes are configured here, all clients applied with this policy will access the specific destination through these gateway settings.
- **Privilege Profile:** Enable or Disable Users' privilege to change password. Administrator can set the maximum sessions per user here.

### 6.3.1 Schedule

- **Schedule Profile:** Click **User >> Schedule** to enter the configuration page and shows the **Permitted Login Hours** list. This function is used to limit the time when clients can log in. Check the desired time-slot checkboxes and click **Apply** to save the settings. These settings will become effective immediately after clicking **Apply**. Administrator can also choose to **Enable** or **Disable** Auto logout when a user exceeds the permitted login hours. Up to 5 profiles can be configured.

Schedule Configuration	
Auto logout station by system	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

Permitted Login Hours - Profile 1							
Select Profile	Profile 1 ▾						
Hour	SUN	MON	TUE	WED	THU	FRI	SAT
00:00~00:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01:00~01:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
02:00~02:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
03:00~03:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
04:00~04:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
05:00~05:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
06:00~06:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## 6.3.2 Firewall

**Firewall Profile:** Click **User >> Firewall** and the Firewall Configuration will appear. Click **Predefined and Custom Service Protocols** to edit the protocol list. Click **Firewall Rules** to edit the rules. Up to 5 profiles can be configured.

Firewall Configuration - Profile 1	
Select Profile	Profile 1 ▼
Predefined and Custom Service Protocols	<button>Configure</button>
User Firewall Rules	<button>Configure</button>
User Firewall Rules (IPv6)	<button>Configure</button>

### 1) Predefined and Custom Service Protocols

**Predefined and Custom Service Protocols:** There are predefined service protocols available for firewall rule editing.

Firewall Profile 1 - Service Protocols List			
No.	Name	Description	Select All
0	ALL	ALL	<input type="checkbox"/>
1	ALL TCP	TCP; Source Port: 0~65535, Destination Port: 0~65535	<input type="checkbox"/>
2	ALL UDP	UDP; Source Port: 0~65535, Destination Port: 0~65535	<input type="checkbox"/>
3	ALL ICMP	ICMP; Type: Any, Code: Any	<input type="checkbox"/>
4	FTP	TCP/UDP; Destination Port: 20;21	<input type="checkbox"/>
5	HTTP	TCP/UDP; Destination Port: 80	<input type="checkbox"/>
6	HTTPS	TCP/UDP; Destination Port: 443	<input type="checkbox"/>
7	POP3	TCP; Destination Port: 110	<input type="checkbox"/>
8	SMTP	TCP; Destination Port: 25	<input type="checkbox"/>
9	DHCP	UDP; Destination Port: 67;68	<input type="checkbox"/>
10	DNS	TCP/UDP; Destination Port: 53	<input type="checkbox"/>

The administrator is able to add new custom service protocols by clicking **Add**, and delete the added protocols individually or with **Select All** followed by **Delete** operation.

**Caution:**

*The Predefined Service Protocols can not be deleted.*

Click **Add** to add a custom service protocol. The **Protocol Type** can be defined from a list of service by protocols (TCP/UDP/ICMP/IP); and then define the **Source Port** (range) and **Destination Port** (range); click **Apply** to save this protocol.



Add Service Protocol	
Name	<input type="text"/>
Protocol Type	TCP ▾
Source Port	<input type="text" value="1"/> ~ <input type="text" value="65535"/>
Destination Port	<input type="text" value="1"/> ~ <input type="text" value="65535"/>

If the **Protocol Type** is **ICMP**, the **Type** and **Code** needs to be defined.

Add Service Protocol			
Name	<input type="text"/>		
Protocol Type	ICMP ▾		
Type	<input type="text"/>	Code	<input type="text"/>

If the **Protocol Type** is **IP**, the **Protocol Number** needs to be defined.

Add Service Protocol	
Name	<input type="text"/>
Protocol Type	IP ▾
Protocol Number	<input type="text"/>

## 2) User Firewall Rules

After the custom protocol is defined(or just use the **Predefined Service Protocols**), you will need to enable the **Firewall Rule** to apply these protocols. Firewall Rules for IPv6 is also supported.

- **Firewall Rules:** Click **Rule No.** to edit individual rules and click **Apply** to save the settings. The rule status will be shown on the list. Check the “**Active**” checkbox and click **Apply** to enable the rule. Rule No.1 has the highest priority; Rule No.2 has the second priority and so on. Each firewall rule is defined by Source, Destination and Pass/Block action. Optionally, a Firewall Rule Schedule can be set to specify when the firewall rule is enforced. It can be set to **Always**, **Recurring** or **One Time**.

Firewall Profile 1 - Firewall Rules								
No.	Active	Action	Rule Name	Source	Destination	Service	Schedule	Operation
				Source Interface	Destination Interface			
(Total:0/10) <a href="#">First</a> <a href="#">Prev</a> <a href="#">Next</a> <a href="#">Last</a> Go to Page <input type="text"/> (Page:1/1) Row per Page: <input type="text"/> 20								
<input type="button" value="Create a New Rule"/>								
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>								

Selecting the Filter Rule Number 1 as an example:

Policy 1 - Edit Filter Rule			
Rule Number	1		
Rule Name	<input type="text"/>		
Source		Destination	
Interface/Zone	ALL <input type="text"/>	Interface/Zone	ALL <input type="text"/>
IP Address <input type="text"/>	0.0.0.0 <input type="text"/>	IP Address <input type="text"/>	0.0.0.0 <input type="text"/>
Subnet Mask	0.0.0.0 (/0) <input type="text"/>	Subnet Mask	0.0.0.0 (/0) <input type="text"/>
MAC Address	<input type="text"/>		
Service Protocol	ALL <input type="text"/>		
Schedule	<input checked="" type="radio"/> Always <input type="radio"/> Recurring <input type="radio"/> One Time		
Action for Matched Packets	<input checked="" type="radio"/> Block <input type="radio"/> Pass		

- **Rule Number:** This is the rule selected "1". Rule No. 1 has the highest priority; rule No. 2 has the second priority, and so on.
- **Rule Name:** The rule name can be changed here.
- **Source/Destination – Interface/Zone:** There are choices of **ALL**, **WAN**, **Public** and **Private** to be applied for the traffic interface.
- **Source/Destination – IP Address/Domain Name:** Enter the source and destination IP addresses. Domain Name filtering is supported but Domain Host filtering is not.
- **Source/Destination – Subnet Mask:** Select the source and destination subnet masks.
- **Source- MAC Address:** The MAC Address of the source IP address. This is for specific MAC address filtering.
- **Service Protocol:** These are defined protocols on the **service protocols list** to be selected.
- **Schedule:** When schedule is selected, clients assigned with this policy are applied the firewall rule only within the time checked. There are three options, **Always**, **Recurring** and **One Time**. **Recurring** is set with the hours within a week.
- **Action for Matched Packets:** There are two options, **Block** and **Pass**. **Block** is to prevent packets from passing and **Pass** is to permit packets passing.

### 6.3.3 QoS Profile

Up to 5 QoS profiles can be configured for certain applications or users that need stable bandwidth or traffic priority. Bandwidth Control can only be Enabled when Bandwidth limits on WAN has been Enabled.

Traffic Configuration - Profile 1	
Select Profile	Profile 1 ▾
Traffic Class	<input type="checkbox"/> IPv4 <input type="checkbox"/> IPv6
Bandwidth Control	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Group Total Downlink	0 Mbps ▾ <small>*(Unlimit: 0, Range: 1-999)</small>
Individual Maximum Downlink	0 Mbps ▾ <small>*(Unlimit: 0, Range: 1-999)</small>
Individual Request Downlink	0 Mbps ▾ <small>*(Unlimit: 0, Range: 1-999)</small>
Group Total Uplink	0 Mbps ▾ <small>*(Unlimit: 0, Range: 1-999)</small>
Individual Maximum Uplink	0 Mbps ▾ <small>*(Unlimit: 0, Range: 1-999)</small>
Individual Request Uplink	0 Mbps ▾ <small>*(Unlimit: 0, Range: 1-999)</small>

- **Traffic Class:** Traffic Class can be chosen for users on IPv4 or IPv6. Default DSCP (Differentiated Services Code Point) can be added and edited to determine traffic class. Default DSCP includes: Network Control 0x30, Telephony 0x2E, Signaling 0x28, Multi-media Conferencing 0x26, Real-Time Interactive 0x20, Multi-media Streaming 0x1A, Broadcast Video 0x18, Low-latency Data 0x12, OAM 0x10, High-Throughput Data 0x0A, Standard 0x00, Low Priority Data 0x08.
- **Bandwidth Control:** Enable or Disable the capability to determine the following parameters.
- **Group Total Downlink:** Defines the maximum bandwidth allowed to be shared by clients.
- **Individual Maximum Downlink:** Defines the maximum downlink bandwidth allowed for an individual client. The Individual Maximum Downlink cannot exceed the value of Group Total Downlink.
- **Individual Request Downlink:** Defines the guaranteed minimum downlink bandwidth allowed for an individual client. The Individual Request Downlink cannot exceed the value of Group Total Downlink and Individual Maximum Downlink.
- **Group Total Uplink:** Defines the maximum uplink bandwidth allowed to be shared by clients.
- **Individual Maximum Uplink:** Defines the maximum uplink bandwidth allowed for an individual client. The Individual Maximum Uplink cannot exceed the value of Group Total Uplink.
- **Individual Request Uplink:** Defines the guaranteed minimum bandwidth allowed for an individual client. The Individual Request Uplink cannot exceed the value of Group Total Uplink and Individual Maximum Uplink.

## 6.3.4 Routing

**Specific Route Profile:** Click **User >> Specific Route** for the **Specific Route Profile**, the 'Specific Route Profile' list will appear.

### 1) Specific Route

- **Specific Route Profile:** The Specific Default Route is used to control clients to access some specific IP segment by the specified gateway. Specific Routing can be set up for the Global Policy and up to 5 profiles can be configured.

Global Policy - Specific Routes			
Route No.	Destination		Gateway
	IP Address	Subnet Netmask	IP Address
1	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
2	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
3	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
4	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>

Specific Routes - Profile 1			
Select Profile		Profile 1 ▼	
Enable <input type="checkbox"/>		Default Gateway: IP Address ▼ <input type="text"/>	
Route No.	Destination		Gateway
	IP Address	Subnet Netmask	IP Address
1	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
2	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
3	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
4	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
5	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
6	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
7	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>
8	<input type="text"/>	255.255.255.255 (/32) ▼	<input type="text"/>

- **Destination / IP Address:** The destination network address or IP address of the destination host. Please note that, if applicable, the system will calculate and display the appropriate value based on the

combination of Network/IP Address and Subnet Mask that have just been entered and applied.

- **Destination / Subnet Netmask:** The subnet mask of the destination network. Select 255.255.255.255(/32) if the destination is a single host.
- **Gateway / IP Address:** The IP address of the gateway or next router to the destination.

## 2) Default Gateway

- **Default Gateway:** The default gateway of a desired IP address can be defined in each Policy except **Global Policy**. When Specific Default Route is enabled, all clients applied with this Policy will access the Internet through this default gateway.

Specific Routes - Profile 1	
Select Profile	Profile 1 ▾
Enable <input checked="" type="checkbox"/>	Default Gateway: IP Address ▾ <input type="text"/>

- **Enable:** Check **Enable** box to activate this function or uncheck to deactivate it.
- **Default Gateway IP Address:** You may need to fill in the IP address of the default gateway.

### 6.3.5 User Privilege

Administrator can choose to allow users to change their Password. And to prevent ill-behaved clients or malicious software from taking up the system's connection resources, the administrator can restrict the number of concurrent sessions that a user can establish.

Privilege Configuration - Profile 1	
Select Profile	Profile 1 ▾
Change Password Privilege	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Maximum Concurrent Sessions	Unlimited ▾ (sessions per user)

- The maximum number of concurrent sessions including TCP and UDP for each user can be specified in the Global policy, which applies to authenticated users, users on a non-authenticated port, privileged users, and clients in DMZ zones. Also, this can be specified in the other policies to apply to the authenticated users.
- When the number of a user's sessions reach the session limit (a choice of Unlimited, 10, 25, 50, 100, 200, 350, 500, 750 and 1000), the user will be implicitly suspended upon receipt of any new connection request. In this case, a record will be logged to a SYSLOG server.

Since this basic protection mechanism may not be able to protect the system from all malicious DoS attacks, it is strongly recommended to build some immune capabilities (such as IDS or IPS solutions) in network deployment to maintain network operation.

## 7 Access Network without Authentication

### 7.1 DMZ

To configure DMZ, go to: **Network >> Network Address Translation >> DMZ (Demilitarized Zone)**.

The screenshot displays the NAT configuration page in the 4ipnet web interface. At the top, there is a navigation bar with tabs: NAT, Privilege, Monitor IP, Walled Garden, Walled Garden Ad, Proxy Server, Local DNS Record, DDNS, and Client Mobility. Below this, a breadcrumb trail reads 'Main Menu > Network > NAT'. The main content area is titled 'Network Address Translation' and contains a table with three rows:

Network Address Translation	
DMZ (Demilitarized Zone)	<input type="button" value="Configure"/>
Public Accessible Server	<input type="button" value="Configure"/>
Port and IP Forwarding	<input type="button" value="Configure"/>

There are 40 sets of static Internal IP Address and External IP Address available. Enter **Internal** and **External** IP Address as a set. After the setup, accessing the External IP address listed in DMZ will be mapped to accessing the corresponding Internal IP Address. These settings will become effective immediately after clicking the **Apply** button. The External IP Address of the Automatic WAN IP Assignment is the IP address of External Interface (WAN) that will change dynamically if WAN Interface is Dynamic. When **Automatic WAN IP Assignments** is enabled, the entered Internal IP Address of Automatic WAN IP Assignment will be bound with WAN interface.



Automatic WAN IP Assignment				
Enable	External IP Address	External Interface	Internal IP Address	Remark
<input type="checkbox"/>	10.16.29.79	WAN	<input type="text"/>	<input type="text"/>

Static Assignments				
No.	External IP Address	External Interface	Internal IP Address	Remark
1	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	WAN ▼	<input type="text"/>	<input type="text"/>

(Total:40) [First](#) [Prev](#) [Next](#) [Last](#) Go to Page  (Page:1/4) Row per Page:

## 7.2 Virtual Server

To configure Virtual Server, go to: **Network >> Network Address Translation >> Public Accessible Server**.

NAT
Privilege
Monitor IP
Walled Garden
Walled Garden Ad
Proxy Server
Local DNS Record
DDNS
Client Mobility

[Main Menu](#) > [Network](#) > NAT

Network Address Translation	
DMZ (Demilitarized Zone)	<a href="#">Configure</a>
<b>Public Accessible Server</b>	<a href="#">Configure</a>
Port and IP Forwarding	<a href="#">Configure</a>


This function allows the administrator to set 40 virtual servers at most, so that client devices outside the managed network can access these servers within the managed network. Different virtual servers can be configured for different sets of physical services, such as TCP and UDP services in general. Enter the “**External Service Port**”, “**Local Server IP Address**” and “**Local Server Port**”. Select “**TCP**” or “**UDP**” for the service type. In the **Enable** column, check the desired server to enable. These settings will become effective immediately after clicking the **Apply** button.


Public Accessible Server						
No.	External Service Port	Local Server IP Address	Local Server Port	Type	Enable	Remark
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="checkbox"/>	<input type="text"/>


## 7.3 Privilege List


To configure the Privilege List, go to: **Network >> Privilege**


Setup the **Privilege IP Address List**, **Privilege MAC Address List** and the **Privilege IPv6 Address List**. The clients accessing the internet via IP addresses and/or networking devices on the list can access the network without any authentication.

System

Users

Network

Utilities

Status

NATPrivilegeMonitor IPWalled GardenWalled Garden AdProxy ServerLocal DNS RecordDDNSClient Mobility

[Main Menu](#) > [Network](#) > Privilege List

Privilege List	
IP Address List	<a href="#">Configure</a>
MAC Address List	<a href="#">Configure</a>
IPv6 Address List	<a href="#">Configure</a>

### 7.3.1 Privilege IP

#### Privilege IP Address List

To configure Privilege IP Address List, go to: **Network >> Privilege >> IP Address List**.

If there are workstations inside the managed network that need to access the network without authentication, enter the IP addresses of these workstations in “**Granted Access by IP Address**”. The “**Remark**” field is not necessary but is convenient for keeping track. The HSG allows 100 privilege IP addresses at most. These settings will become effective immediately after clicking **Apply**.

NATPrivilegeMonitor IPWalled GardenWalled Garden AdProxy ServerLocal DNS RecordDDNSClient Mobility

[Main Menu](#) > [Network](#) > [Privilege List](#) > IP Address

Backup IP Privilege ListRestore IP Privilege List

Granted Access by IP Address

Create a New Item

No.	IP Address	MAC Address	Group	Remark	Action
-----	------------	-------------	-------	--------	--------

(Total:0/100) [First](#) [Prev](#) [Next](#) [Last](#) Go To Page  (Page:1/1) Row per Page:

**Caution:**

Permitting specific IP addresses to have network access rights without going through standard authentication process under Public zone may cause security problems.

### 7.3.2 Privilege MAC

#### Privilege MAC Address List

In addition to the Privilege IP List, MAC address List allows the MAC address of the workstations that need to access the network without authentication to be set in “**Granted Access by MAC Address**”. The HSG allows 200 privilege MAC addresses at most. When manually creating the list, enter the MAC address (the format is xx:xx:xx:xx:xx:xx) as well as the remark (optional). These settings will be effective immediately after clicking **Apply**.

Granted Access by MAC Address		
No.	MAC Address	Remark
1	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>

(Total: 100) [First](#) [Prev](#) [Next](#) [Last](#)

**Caution:**

Permitting specific MAC addresses to have network access rights without going through standard authentication process under Public zone may cause security problems.



### 7.3.3 Privilege IPv6

#### Privilege IPv6 Address List

In addition to the Privilege IP List, MAC address List, the privilege IPv6 List allows the IPv6 address of the workstations that need to access the network without authentication to be set in “**Granted Access by IPv6 Address**”. The HSG allows 100 privilege IPv6 addresses at most. When manually creating the list, enter the IPv6 address (the format is xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx) as well as the remark (optional). These settings will be effective immediately after clicking **Apply**.

## 7.4 Disable Authentication in Public Zone

To disable Authentication in Public Zone, go to: **System >> Service Zones**, click **Configure** in **Public Zone**.

Service Zone Settings						
Service Zone Name	Applied Policy	IP Address	Network Alias	DHCP Pool	LAN Port Mapping	Details
	Default Authen Option	IPv6 Address			Status	
Private	Policy 1	192.168.1.254	N/A	192.168.1.1 ~ 192.168.1.100		<a href="#">Configure</a>
	Disabled	N/A			Enabled	
Public	Policy 1	172.21.0.254	N/A	172.21.0.1 ~ 172.21.0.100		<a href="#">Configure</a>
	Server 1	N/A			Enabled	

Authentication Settings					
Authentication Required For the Zone		<input checked="" type="radio"/> Enable <input type="radio"/> Disable <input type="radio"/> Suspend			
WISPr Configuration		<a href="#">Configure</a>			
Authentication Options	Auth Option	Auth Database	Postfix	Default	Enable
	<a href="#">Server 1</a>	LOCAL	local	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">Server 2</a>	RADIUS	radius1	<input type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">Server 3</a>	RADIUS	radius2	<input type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">On-demand User</a>	ONDEMAND	ondemand	<input type="radio"/>	<input checked="" type="checkbox"/>
	<a href="#">FREE</a>	FREE	N/A	<input type="radio"/>	<input type="checkbox"/>

- Authentication Required For the Zone:** When it is disabled, users will not need to authenticate before they get access to the network within Public Zone.

## 8 User Login and Logout

### 8.1 Before Login

#### 8.1.1 Login with SSL

To configure HTTPS, go to: **System >> General**.

HTTPS (HTTP over SSL or HTTP Secure) is the use of Secure Socket Layer (SSL) or Transport Layer Security (TLS) as a sub-layer under regular HTTP application layering. HTTPS encrypts and decrypts user page requests as well as the pages that are returned by the Web server.

The **HTTPS Protected Login** function makes the client's login more secure. Enable it to activate https (encryption) or disable it to activate http (non encryption) login page.

General Settings for the Entire System	
System Name	Wireless Hotspot Gateway
Administrator Contact Information	
Suspend Warning Message	Sorry! The service is suspended. *
Internal Domain Name	gateway.example.com <input checked="" type="checkbox"/> Use the name on the security certificate (FQDN of this device for internal use, e.g. controller.office-name.com)
Disclaimer Page	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Portal URL	<input checked="" type="radio"/> Specific <input type="radio"/> Original <input type="radio"/> None http://www.google.com *(e.g. http://www.example.com) Browser ID(User Agent) IEMobile/7.0,XBLWP7 (e.g. IEMobile/7.0,XBLWP7, separate by comma)
UAM Filter	<input type="button" value="Configure"/>
User Log Access IP Address	<input type="text"/> (e.g. 192.168.2.1)
Management IP Address List	<input type="button" value="Configure"/>
SNMP	<input checked="" type="radio"/> Enable <input type="radio"/> Disable <input type="button" value="Configure"/>
HTTPS Certificate	Default CERT ▼
HTTPS Protected Login	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

### 8.1.2 Internal Domain Name with Certificate

To configure Internal Domain Name, go to: **System >> General**.

Internal Domain Name is the domain name of the HSG seen on client machines connected under zone. It must conform to FQDN (Fully-Qualified Domain Name) standard. A user on client machine can use this domain name to access the HSG instead of its IP address.

In addition, when “**Use the name on the security certificate**” option is checked, the system will use the CN (Common Name) value of the uploaded SSL certificate as the domain name.

The screenshot shows the configuration interface for the HSG. At the top, there are tabs for General, WAN, WAN Traffic, IPv6, LAN Port Mapping, and Service Zones. The 'General' tab is selected. Below the tabs, there is a breadcrumb trail: Main Menu > System > General. The main content area is titled 'General Settings for the Entire System' and contains a table with the following fields:

General Settings for the Entire System	
System Name	Wireless Hotspot Gateway
Administrator Contact Information	
Suspend Warning Message	Sorry! The service is suspended. *
Internal Domain Name	gateway.example.com <input checked="" type="checkbox"/> Use the name on the security certificate <small>(FQDN of this device for internal use, e.g. controller.office-name.com)</small>

To Configure Certificate, go to: **Utilities >> Certificate** and choose Upload Certificate from the scroll down menu.

**Certificate:** A data record used for authenticating network entities such as a server or a client. A certificate contains X.509 information pieces about its owner (called the subject) and the signing Certificate Authority (called the issuer), plus the owner's public key and the signature made by the CA. Network entities verify these signatures using CA certificates. You can apply for a SSL certificate at CAs such as VeriSign.

If you already have a SSL Certificate, please Click **Browse** to select the file and upload it. Click **Apply** to complete the upload process. If you do not have a valid SSL Certificate, use the system default certificate.



Administrator Account
Backup & Restore
System Upgrade
Restart
Network Utilities
Certificate

[Main Menu](#) > [Utilities](#) > Certificate

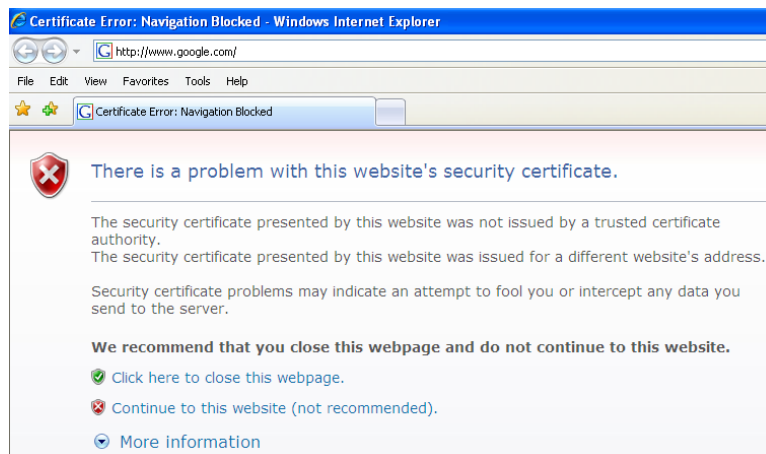
### Certificate Utility

Upload Certificate

Upload Certificate	
Private Key	<input type="text"/> Browse...
Certificate	<input type="text"/> Browse...
Certification Path Verification	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

Apply
Clear

Without a valid certificate, users may encounter the following warning when trying to open the login page.



Click "Continue to this website" to access the user login page.

### 8.1.3 Walled Garden

To configure Walled Garden, go to: **Network >> Walled Garden**.

This function provides certain free services for users to access the websites listed here before login and authentication. Up to 20 addresses or domain names of the websites can be defined on this list. Users without the network access right can still have a chance to experience the actual network service free of charge. Enter the **IP Address** or **Domain Name** (of the website) on the list and click **Apply** to save the settings.

Add Walled Garden List				
No.	Active	Domain Name/IP Address	Service Zone	Remark
1	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
2	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
3	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
4	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
5	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
6	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
7	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
8	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
9	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>
10	<input type="checkbox"/>	<input type="text"/>	All ▼	<input type="text"/>

### 8.1.4 Walled Garden AD

To configure Walled Garden AD List, go to: **Network >> Walled Garden AD**.

This function provides advertisement links to web pages for users to access free of charge before login and authentication. Advertisement hyperlinks are displayed on the user's login page.

Walled Garden Ad List				
Item	URL	Topic	Edit	Display
	Description			
1			<div>Edit</div>	<div><input type="checkbox"/></div>
2			<div>Edit</div>	<div><input type="checkbox"/></div>
3			<div>Edit</div>	<div><input type="checkbox"/></div>
4			<div>Edit</div>	<div><input type="checkbox"/></div>
5			<div>Edit</div>	<div><input type="checkbox"/></div>
6			<div>Edit</div>	<div><input type="checkbox"/></div>
7			<div>Edit</div>	<div><input type="checkbox"/></div>
8			<div>Edit</div>	<div><input type="checkbox"/></div>
9			<div>Edit</div>	<div><input type="checkbox"/></div>
10			<div>Edit</div>	<div><input type="checkbox"/></div>

- Enter all items or make changes by clicking the **Edit** button, click **Apply**, the items will be added and shown on the list.
- **URL:** Enter the URL of the advertisement website.
- **Topic:** Enter the content of the hyperlink, for instance if you enter Google in this field, on the user login page a hyperlink of Google will be displayed.
- **Description:** Any additional message for administrator's reference.
- **Display:** Choose **Display** to display advertisement hyperlinks on the login pages.

## 8.2 After Login

### 8.2.1 Start Page URL after Successful Login

To configure the Start Page URL after a successful user login, go to: **System >> General**.

When this function is enabled, the administrator can choose to set the URL of an opened browser after users' initial login.

General Settings for the Entire System	
<b>System Name</b>	Wireless Hotspot Gateway
<b>Administrator Contact Information</b>	
<b>Suspend Warning Message</b>	Sorry! The service is suspended. *
<b>Internal Domain Name</b>	gateway.example.com <input checked="" type="checkbox"/> Use the name on the security certificate (FQDN of this device for internal use, e.g. controller.office-name.com)
<b>Disclaimer Page</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<b>Start Page URL</b>	<input checked="" type="radio"/> Specific <input type="radio"/> Original <input type="radio"/> None <div style="border: 2px solid red; padding: 2px;">http://www.google.com</div> *(e.g. http://www.example.com) Browser ID(User Agent) IEMobile/7.0,XBLWP7 (e.g. IEMobile/7.0,XBLWP7, separate by comma)

When this function is set to **None**, after users logged in successfully, users will simply use the original homepage set on the users' browsers.

## 8.2.2 Idle Timer

To configure Idle Timer, go to: **Users >> Additional Control**.

If a user has idled with no network activities, the system will automatically kick the user out. The logout timer can be set between 1~1440 minutes, and the default idle time is 10 minutes.

Additional Control		
User Session Control	Idle Timeout (minutes)	10 <small>*(1-1440)</small>
	Interval for Idle Traffic Detection (seconds)	60 <small>*(1-600)</small>
	Threshold for Idle Traffic Detection (bytes)	0 <small>*(0-1048576, 0 is Disabled)</small>
	Idle Timeout Check Direction	<input type="radio"/> Uplink <input checked="" type="radio"/> Uplink & Downlink
	Multiple Login	<input type="checkbox"/> Enable <small>(This function is not applicable to on-demand accounts.)</small>
	Charge Traffic to/from Hosts in Walled Garden List	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
	Kick out users when their IPs are changed	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

### 8.2.3 Multiple Login

To configure Multiple Login, go to: **Users >> Additional Control**.

When enabled, a user can log in from different computers with the same account. (This function doesn't support On-demand users.)

Additional Control	
User Session Control	Idle Timeout (minutes) <input type="text" value="10"/> <small>*(1-1440)</small>
	Interval for Idle Traffic Detection (seconds) <input type="text" value="60"/> <small>*(1-600)</small>
	Threshold for Idle Traffic Detection (bytes) <input type="text" value="0"/> <small>*(0-1048576, 0 is Disabled)</small>
	Idle Timeout Check Direction <input type="radio"/> Uplink <input checked="" type="radio"/> Uplink & Downlink
	Multiple Login <input type="checkbox"/> Enable <small>(This function is not applicable to on-demand accounts.)</small>
	Charge Traffic to/from Hosts in Walled Garden List <input type="radio"/> Enable <input checked="" type="radio"/> Disable
	Kick out users when their IPs are changed <input type="radio"/> Enable <input checked="" type="radio"/> Disable

## 9 Networking Features of a Gateway

### 9.1 Dynamic Domain Name Service (DDNS)

To configure Dynamic Domain Name Service, go to: **Network >> DDNS**.

Before activating this function, you must have your Dynamic DNS hostname registered with a Dynamic DNS provider. The HSG gateway supports DNS function to alias the dynamic IP address for the WAN port to a static domain name, allowing the administrator to easily access the HSG gateway's WAN. If the dynamic DHCP is activated at the WAN port, it will update the IP address of the DNS server periodically. These settings will become effective immediately after clicking **Apply**.

Dynamic DNS	
DDNS	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Provider	DynDNS.org(Dynamic) ▼
Host Name	<input type="text"/> *
Username/E-mail	<input type="text"/> *
Password/Key	<input type="text"/> *

- **DDNS:** Enable or disable this function.
- **Provider:** Select the DNS provider.
- **Host name:** The IP address/domain name of the WAN port.
- **Username/E-mail:** The register ID (username or e-mail) for the DNS provider.
- **Password/Key:** The register password for the DNS provider.

**Note:**

To apply for free Dynamic DNS service, you may go to <http://www.dyndns.com/services/dns/dyndns/howto.html>.

## 9.2 Port and IP Forwarding

To configure Port and IP Forwarding, go to: **Network >> NAT >> Port and IP Forwarding**.

This function allows the administrator to set at most 40 sets of IP addresses for redirection purposes. When the user attempts to connect to a destination IP address listed here, the connection packet will be converted and redirected to the corresponding destination. Please enter the “**IP Address**” and “**Port**” of **Destination**, and the “**IP Address**” and “**Port**” of **Translated to Destination**. Select “**TCP**” or “**UDP**” for the service’s type. These settings will become effective immediately after clicking **Apply**.

Port and IP Forwarding						
No.	Destination		Translated to Destination		Type	Remark
	IP Address	Port	IP Address	Port		
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> TCP <input type="radio"/> UDP	<input type="text"/>



## 10 System Management and Utilities

### 10.1 System Time

To configure System Time, go to: **System >> General**.

**NTP** (Network Time Protocol) communication protocol can be used to synchronize the system time with remote time server. Please specify the local time zone and the IP address of at least one NTP server for adjusting the time automatically (Universal Time is Greenwich Mean Time, GMT).

Manual setup is another option to set up the system time, if you choose to set up the system time manually, please enter the Year, Month, Day, the current time and click Apply to activate the changes.

<b>Time</b>	System Time : 2010/06/17 10:41:24	
	Time Zone :	
	<input type="text" value="(GMT+08:00)Taipei"/>	
	<input checked="" type="radio"/> NTP	
	NTP Server 1:	<input type="text" value="tock.usno.navy.mil"/> *(e.g. tock.usno.navy.mil)
	NTP Server 2:	<input type="text" value="tock.stdtime.gov.tw"/>
	<input type="radio"/> Manually set up	

**NTP Server Mode:** When Enabled, Access Points and devices in the Local Area Network of the gateway would be able to use the gateway as a NTP Server for time reference.

**Note:**

When system can not sync the time with NTP server, all clients will not be allowed to log in to system.  
Also on-demand accounts cannot be created.

## 10.2 Management IP Address List

To configure the Management IP Address List, go to: **System >> General**.

General Settings for the Entire System	
System Name	Wireless Hotspot Gateway
Administrator Contact Information	
Suspend Warning Message	Sorry! The service is suspended. *
Internal Domain Name	gateway.example.com <input checked="" type="checkbox"/> Use the name on the security certificate (FQDN of this device for internal use, e.g. controller.office-name.com)
Disclaimer Page	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Portal URL	<input checked="" type="radio"/> Specific <input type="radio"/> Original <input type="radio"/> None http://www.google.com *(e.g. http://www.example.com) Browser ID(User Agent) IEMobile/7.0,XBLWP7 (e.g. IEMobile/7.0,XBLWP7, separate by comma)
UAM Filter	<input type="button" value="Configure"/>
User Log Access IP Address	<input type="text"/> (e.g. 192.168.2.1)
Management IP Address List	<input type="button" value="Configure"/>

Only PCs within the Management IP range on the list are allowed to access the system's web management interface. For example, 10.2.3.0/24 means that as long as an administrator is using a computer with the IP address range of 10.2.3.0/24, he or she can access the web management page. Another example is 10.0.0.3: if an administrator is using a computer with the IP address of 10.0.0.3, he or she can access the web management page.

Management IP Address List					
No.	Active	IP Address/Segment	No.	Active	IP Address/Segment
1	<input checked="" type="checkbox"/>	0.0.0.0/0.0.0.0	2	<input type="checkbox"/>	
3	<input type="checkbox"/>		4	<input type="checkbox"/>	
5	<input type="checkbox"/>		6	<input type="checkbox"/>	
7	<input type="checkbox"/>		8	<input type="checkbox"/>	
9	<input type="checkbox"/>		10	<input type="checkbox"/>	
11	<input type="checkbox"/>		12	<input type="checkbox"/>	
13	<input type="checkbox"/>		14	<input type="checkbox"/>	
15	<input type="checkbox"/>		16	<input type="checkbox"/>	
17	<input type="checkbox"/>		18	<input type="checkbox"/>	
19	<input type="checkbox"/>		20	<input type="checkbox"/>	

The default value is "0.0.0.0/0.0.0.0". It means that the WMI can be accessed by any IP address, for security consideration; please change this value before the system provides service.

## 10.3 IP Address for Accessing User Log

To configure User Log Access IP History, go to: **System >> General**.

General Settings for the Entire System	
<b>System Name</b>	Wireless Hotspot Gateway
<b>Administrator Contact Information</b>	
<b>Suspend Warning Message</b>	Sorry! The service is suspended. *
<b>Internal Domain Name</b>	gateway.example.com <input checked="" type="checkbox"/> Use the name on the security certificate (FQDN of this device for internal use, e.g. controller.office-name.com)
<b>Disclaimer Page</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<b>Portal URL</b>	<input checked="" type="radio"/> Specific <input type="radio"/> Original <input type="radio"/> None http://www.google.com *(e.g. http://www.example.com) Browser ID(User Agent) IEMobile/7.0,XBLWP7 (e.g. IEMobile/7.0,XBLWP7, separate by comma)
<b>UAM Filter</b>	<input type="button" value="Configure"/>
<b>User Log Access IP Address</b>	<input type="text"/> (e.g. 192.168.2.1)
<b>Management IP Address List</b>	<input type="button" value="Configure"/>

Specify an IP address of the administrator's computer or a billing system to get billing history information of the HSG with the predefined URLs. The file name format is "yyyy-mm-dd" such as the following:

Traffic History : <https://10.2.3.213/status/history/2012-02-10>

On-demand History : <https://10.2.3.213/status/odhistory/2012-07-10>

## 10.4 SNMP

To configure SNMP, go to: **System >> General**. The HSG supports SNMP v1/v2c.

If this function is enabled, the SNMP Management IP and the Community string can be assigned for SNMP management applications to access the system.

General Settings for the Entire System	
System Name	Wireless Hotspot Gateway
Administrator Contact Information	
Suspend Warning Message	Sorry! The service is suspended. *
Internal Domain Name	gateway.example.com <input checked="" type="checkbox"/> Use the name on the security certificate (FQDN of this device for internal use, e.g. controller.office-name.com)
Disclaimer Page	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Portal URL	<input checked="" type="radio"/> Specific <input type="radio"/> Original <input type="radio"/> None http://www.google.com *(e.g. http://www.example.com) Browser ID(User Agent) IEMobile/7.0,XBLWP7 (e.g. IEMobile/7.0,XBLWP7, separate by comma)
UAM Filter	<input type="button" value="Configure"/>
User Log Access IP Address	<input type="text"/> (e.g. 192.168.2.1)
Management IP Address List	<input type="button" value="Configure"/>
SNMP	<input checked="" type="radio"/> Enable <input type="radio"/> Disable <input type="button" value="Configure"/>

SNMP Configuration List			
Item	Manager IP Address	Read Community	Write Community
1	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	<input type="text"/>

## 10.5 Administration

The HSG supports customizable administration account types, namely **Super Group**, **Manager**, **On-Demand Manager** or **Operator**. The default predetermined group of the Administrator is Super group, and the username and password are as follows:

**Admin:** The administrator can access all configuration pages of the HSG.

Username: **admin**






Password: **admin**



After a successful login to the HSG, a web management interface with a Home manual will appear.



Admin is classified under Super Group, with all access and configuration authorities. Super Group members can generate other administrative accounts (Manager, OnDemand Manager and Operator) and configure Password Safety and Group Permission Settings.

 <b>System</b>	 <b>Users</b>	 <b>Network</b>	 <b>Utilities</b>	 <b>Status</b>
--	---	---	---	--

Administrator Account
Backup & Restore
System Upgrade
Restart
Network Utilities
Certificate

[Main Menu](#) > [Utilities](#) > Administrator Account

Generate Admin Account	
<b>Name</b>	<input style="width: 90%;" type="text"/> *
<b>Password</b>	<input style="width: 90%;" type="password"/> *
<b>Confirm Password</b>	<input style="width: 90%;" type="password"/> *
<b>Group</b>	Super Group ▼

Apply
Cancel

Admin Account Configuration	
<b>Password Safety Settings</b>	<span style="border: 1px solid #000; padding: 2px 10px;">Configure</span>
<b>Group Permission Settings</b>	<span style="border: 1px solid #000; padding: 2px 10px;">Configure</span>

### Password Safety Settings:

Password rules and requirements can be configured here to facilitate additional security. The following parameters can be configured: **Password Complexity**, **Admin Login Retry Times**, **Password Expire**, and **Admin Login Reuse Times**.

Safety Setting	
<b>Complexity Checking</b>	<div style="display: flex; align-items: center;"> <input checked="" type="radio"/> Enable           <input type="radio"/> Disable         </div> <div style="margin-top: 5px;">           Min Password Length <input style="width: 50px;" type="text" value="2"/> * (2~20)         </div> <div style="margin-top: 5px;">           Min Password Category <input style="width: 50px;" type="text" value="2"/> * (2~4)         </div>
<b>Admin Login Retry Times</b>	<div style="display: flex; align-items: center;"> <input checked="" type="radio"/> Enable           <input type="radio"/> Disable         </div> <div style="margin-top: 5px;">           Retry Times <input style="width: 50px;" type="text" value="5"/> *         </div>
<b>Password Expire</b>	<div style="display: flex; align-items: center;"> <input checked="" type="radio"/> Enable           <input type="radio"/> Disable         </div> <div style="margin-top: 5px;">           Expire Password Days <input style="width: 50px;" type="text" value="90"/> *         </div>
<b>Admin Login Reuse Times</b>	<div style="display: flex; align-items: center;"> <input checked="" type="radio"/> Enable           <input type="radio"/> Disable         </div> <div style="margin-top: 5px;">           Reuse Times <input style="width: 50px;" type="text" value="6"/> *         </div>

Apply
Cancel

There are three other default Administrative Account groups with predetermined permission settings, and these permission settings can be customized.



**Manager:** The manager can only access the configuration pages under **User Authentication** to manage the user accounts.

Authentication Settings		
Auth Option	Auth Database	Postfix
<a href="#">Server 1</a>	LOCAL	local
<a href="#">Server 2</a>	RADIUS	radius1
<a href="#">Server 3</a>	RADIUS	radius2
<a href="#">On-demand User</a>	ONDEMAND	ondemand
<a href="#">FREE</a>	FREE	N/A

**Operator:** The operator can only access the configuration page of **Create On-demand User** to create new on-demand user accounts and print out the on-demand user account receipts.

On-demand Account Creation					
Plan	Type	Quota	Price	Status	Function
1	Usage-time	15 min(s) connection time quota with expiration	10.91	Enabled	<a href="#">Create</a>
2	Usage-time	11 min(s) connection time quota	1	Enabled	<a href="#">Create</a>
3	Cut-off	Valid until 12:00 the following day	5	Enabled	<a href="#">Create</a>
4	Duration-time	Valid from 2010/07/14 12:00:00 till 2010/07/14 23:59:00	1	Enabled	<a href="#">Create</a>

**OnDemand Manager:** The OnDemand Manager can only access the **application programming interface** and generate on-demand user accounts from the API.

There are three additional custom groups for administrators to customize permission settings.

Select Group		
Super Group		
Super Group		
Manager		
Operator		
OnDemand Manager		
Custom 1		
Custom 2		
Custom 3		
Setting Permission		
System	<input checked="" type="checkbox"/> Private <input checked="" type="checkbox"/> Public <input checked="" type="checkbox"/> main <input checked="" type="checkbox"/> WAN <input checked="" type="checkbox"/> IPv6 <input checked="" type="checkbox"/> Service Zones	<input checked="" type="checkbox"/> General <input checked="" type="checkbox"/> WAN Traffic <input checked="" type="checkbox"/> LAN Port Mapping
Users	<input checked="" type="checkbox"/> main <input checked="" type="checkbox"/> Black List <input checked="" type="checkbox"/> Policy <input checked="" type="checkbox"/> Firewall <input checked="" type="checkbox"/> Specific Route <input checked="" type="checkbox"/> Additional Control	<input checked="" type="checkbox"/> Authentication <input checked="" type="checkbox"/> Group <input checked="" type="checkbox"/> Schedule <input checked="" type="checkbox"/> QoS <input checked="" type="checkbox"/> Privilege <input checked="" type="checkbox"/> Operator

**Note:**

To logout, simply click the **Logout** icon on the upper right corner of the interface to return to the login screen.

## 10.6 Change Admin Passwords

To configure Admin passwords, go to: **Utilities >> Administrator Account**.

There are four predetermined levels of authority: **Super Group**, **Manager**, **Operator**, and **On-Demand Manager**. The usernames and passwords can be configured at: **Utilities >> Administrator Account**. Clicking on the hyperlink of the Name allows the administrator to change passwords.

The administrator can change the passwords here. Click Admin name on the Admin List, Enter original and new password and click **Apply** to activate the new password.

**Note:**

Only **admin** has the authority to change password.

Admin Editing and Password Safety Setting	
Name	admin
Original Password	<input type="password"/> *
New Password	<input type="password"/> *
Verify Password	<input type="password"/> *

**Caution:**

*If the administrator's password is lost, the administrator's password still can be changed through the text mode management interface via the serial console port.*



## 10.7 Backup / Restore and Reset to the Factory Default

To configure Backup / Restore and Reset to Factory Default, go to: **Utilities >> Backup & Restore**.

This function is used to backup/restore the HSG settings. Also, the HSG can be restored to the factory default settings here.

Backup System Settings	
<div>Backup</div>	

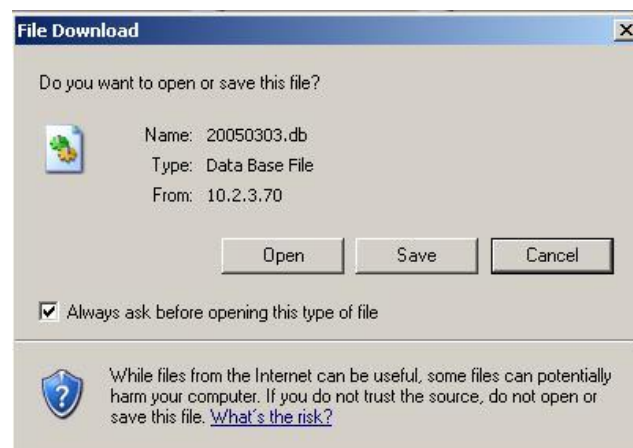
  

Restore System Settings	
File Name	<div>Browse...</div>
	<div><input checked="" type="checkbox"/> Keep WAN setting and Management IP Address List. <input type="checkbox"/> Keep LAN, Alias and DHCP settings. <input type="checkbox"/> Keep Certificate. <input type="checkbox"/> Keep Account.</div>
<div>Restore</div>	

Reset to the Factory Default	
<div>Reset</div>	

- **Backup System Settings:** Click **Backup** to create a .db database backup file and save it on disk.



- **Restore System Settings:** Click **Browse** to search for a .db database backup file created by the HSG and click **Restore** to restore to the same settings at the time when the backup file was saved.
- **Reset to Factory Default:** Click **Reset** to load the factory default settings of the HSG.

## 10.8 Firmware Upgrade

To configure Firmware Upgrade, go to: **Utilities >> System Upgrade**.

The administrator can download the latest firmware from the website and upgrade the system here. Select the latest firmware with **Browse** button, then click **Apply**, the system will upload the file and restart to perform the upgrade process. The firmware upgrade process can also be done via FTP. It might take a few minutes before the upgrade process completes and the new firmware's WMI interface appears.

System Firmware Upgrade	
Current Version	1.00.00
File Name	<input type="text"/> <input type="button" value="Browse..."/> <input type="button" value="Apply"/>
Upgrade by FTP	<div>IP Address: <input type="text"/> Port: <input type="text"/></div> <div>Anonymous <input checked="" type="radio"/> Yes <input type="radio"/> No</div> <div>File Name <input type="text"/> <input type="button" value="Apply"/></div> <div>ex: file name or dir/file name</div>

**Note:** For maintenance purposes, we strongly recommend you to backup the system settings before the upgrade.

**Note:**

After clicking **Apply**, the system will begin uploading the chosen firmware into the system. Once the upload process is complete, the system will restart to activate the new firmware. The entire process may take a few minutes until the new firmware WMI appears. When restart is complete, system will not lease IP. So, please use static IP PC to upgrade system firmware.

**Caution:**

1. Firmware upgrade may cause the loss of some data. You may need to manually backup user account information, please refer to the release notes for the limitation before upgrading.
2. Do not power on/off the system during the upgrade or restart process. It may damage the system and cause malfunction.

## 10.9 Restart

To perform system restart, go to: **Utilities >> Restart**.

This function allows the administrator to safely restart the HSG, and the process takes approximately three minutes. **Reason** for restarting the system can be entered for record purposes. Click **YES** to restart the HSG; click **NO** to go back to the previous screen. Do NOT power off during system restart as this might damage the system. If the power needs to be turned off, it is highly recommended to restart the HSG first and then turn off the power after completing the restart process.

The screenshot shows the 'Restart' utility interface. At the top, there is a navigation bar with tabs: 'Administrator Account', 'Backup & Restore', 'System Upgrade', 'Restart' (selected), 'Network Utilities', and 'Certificate'. Below the navigation bar, a breadcrumb trail reads 'Main Menu > Utilities > Restart'. The main content area contains a confirmation dialog with the text 'Do you want to **RESTART** the system?'. Below this text is a text input field labeled 'Reason:'. At the bottom of the dialog are two yellow buttons: 'YES' and 'NO'.

**Caution:**

*The connection of all online users to the system will be disconnected when system is in the process of restarting.*

## 10.10 Network Utility

To configure Network Utility, go to: **Utilities >> Network Utilities**.

System provides some network utilities for administrators. Both IPv4 and IPv6 are supported.

**Wake-on-LAN** is for waking up remote devices that supports Wake-on-LAN feature by entering the MAC address of the target device and then press **Wake Up** button.

**Ping** is to see whether a destination host is reachable and alive by entering the destination host's domain name or IP address and then press **Ping** button.

**Trace Route** displays the actual route taken to reach the destination host. Entering the destination host's domain name or IP address and then press **Start** button to see the route.

**ARP Table** is for displaying ARP information stored on the system.

Network Utilities			
<b>Wake-on-LAN</b>		<input type="text"/> (MAC, e.g. XX:XX:XX:XX:XX:XX)	<b>Wake Up</b>
<b>IPv4</b>	<b>Ping</b>	<input type="text"/> (IP/Domain Name)	<b>Ping</b>
	<b>Trace Route</b>	<input type="text"/> (IP/Domain Name)	<b>Start</b> <b>Stop</b>
	<b>ARPing</b>	<input type="text"/> (IP/Domain Name) Interface <b>WAN1</b> ▼	<b>ARPing</b>
	<b>ARP Table</b>	<b>Show</b>	
<b>IPv6</b>	<b>Ping6</b>	<input type="text"/> (IP/Domain Name)	<b>Ping6</b>
	<b>Trace Route 6</b>	<input type="text"/> (IP/Domain Name)	<b>Start</b> <b>Stop</b>
	<b>Neighbor Discovery</b>	<input type="text"/> (IP/Domain Name) Interface <b>WAN1</b> ▼	<b>Discovery</b>
	<b>Neighbor Cache</b>	<b>Show</b>	

### **10.10.1 Wake-on-LAN**

This allows the system to remotely boot up a power-down computer connected to a LAN port with Wake-On-LAN feature enabled in its BIOS. Enter the MAC Address of the desired device and click **Wake Up** to execute this function.

### **10.10.2 Ping**

It allows administrator to detect a device using IP address or Host domain name to see if it is alive or not.

### **10.10.3 Trace Route**

It allows administrator to find out the real path of packets from the gateway to a destination using IP address or Host domain name.

### **10.10.4 Show ARP Table**

It allows administrator to view the IP-to-Physical address translation tables used by address resolution protocol (ARP).

## 10.11 Monitor IP Link

To configure Monitor IP Link, go to: **Network >> Monitor IP**.

The HSG will send out a packet periodically to monitor the connection status of the IP addresses on the list. On each monitored item with a WEB server running, administrators may add a link for easy access by entering the IP, selecting the **Protocol** to *http* or *https* and then clicking **Create**. After clicking **Create**, the IP address will become a hyperlink, and administrators can easily access the host remotely by clicking the hyperlink. Click the **Delete** button to remove the hyperlink if needed.

Monitor IP List				
No.	Protocol	IP Address	Hyperlink	Remark
1	http ▼	<input type="text"/>	Create	<input type="text"/>
2	http ▼	<input type="text"/>	Create	<input type="text"/>
3	http ▼	<input type="text"/>	Create	<input type="text"/>
4	http ▼	<input type="text"/>	Create	<input type="text"/>
5	http ▼	<input type="text"/>	Create	<input type="text"/>
6	http ▼	<input type="text"/>	Create	<input type="text"/>
7	http ▼	<input type="text"/>	Create	<input type="text"/>
8	http ▼	<input type="text"/>	Create	<input type="text"/>
9	http ▼	<input type="text"/>	Create	<input type="text"/>
10	http ▼	<input type="text"/>	Create	<input type="text"/>

## 10.12 Console Interface

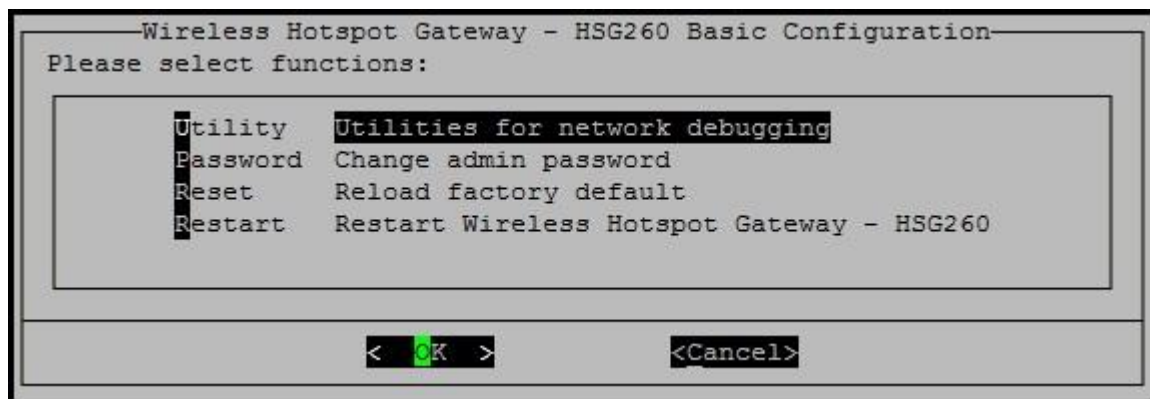
Via the console port, administrators can enter the console interface to handle problems and situations occurred during operation.

1. In order to connect to the console port of the HSG, a console, modem cable, and a terminal simulation program, such as the Hyper Terminal are needed.
2. If a Hyper Terminal is used, please set the parameters as **9600, 8, None, 1, None**.

**Caution:**

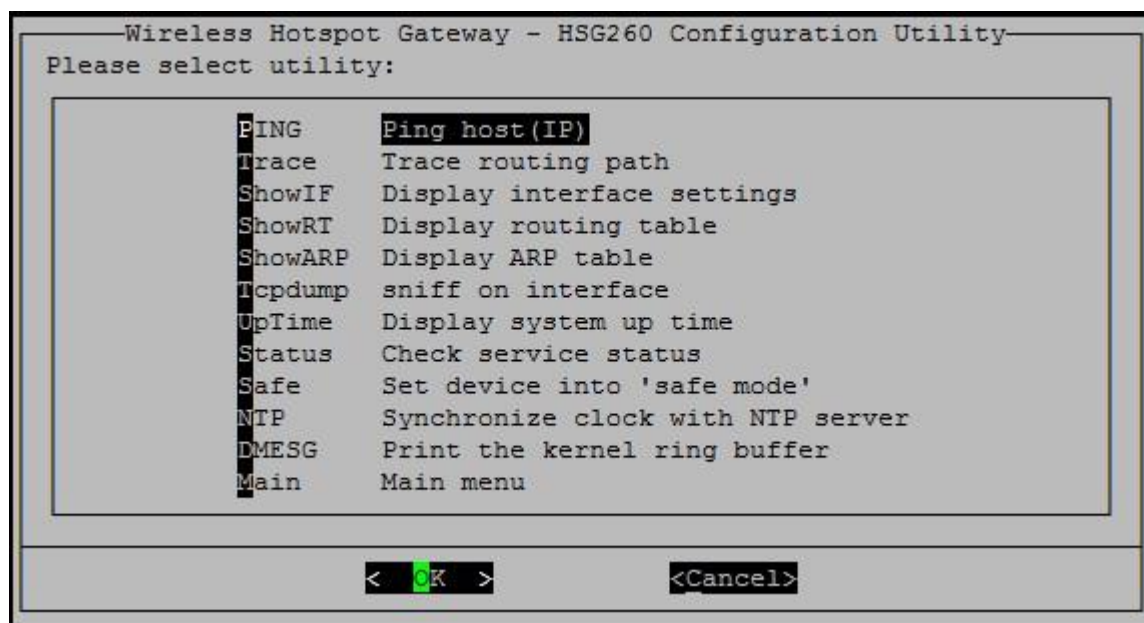
*The main console is a menu-driven text interface with dialog boxes. Please use arrow keys on the keyboard to browse the menu and press the **Enter** key to make selection or confirm what you enter.*

3. Once the console port of the HSG is connected properly, the console main screen will appear automatically. If the screen does not appear in the terminal simulation program automatically, please try to press the arrow keys so that the terminal simulation program will send some messages to the system, and the welcome screen or main menu should appear. If the welcome screen or main menu of the console still does not pop up, please check the connection of the cables and the settings of the terminal simulation program.



- **Utilities for network debugging**

The console interface provides several utilities to assist the Administrator to check the system conditions and to debug any problems. The utilities are described as follows:



- Ping host (IP): By sending ICMP echo request to a specified host and waiting for the response to test the network status.
- Trace routing path: Trace and inquire the routing path to a specific target.
- Display interface settings: It displays the information of each network interface setting including the MAC address, IP address, and Netmask.
- Display the routing table: The internal routing table of the system is displayed, which may help to confirm the Static Route settings.
- Display ARP table: The internal ARP table of the system is displayed.
- Sniff on interface: This is used to confirm if data packets are passing through the interface.
- Display system up time: The system life time (time for system being turned on) is displayed.
- Check service status: Check and display the status of the system.
- Set device into "safe mode": This is used if the administrator is unable to use Web Management Interface via browser when the system fails inexplicitly. The administrator can choose this utility and set it into safe mode, which enables him to manage this device with browser again.
- Synchronize clock with NTP server: Immediately synchronizes the clock through the NTP protocol and the specified network time server. Since this interface does not support manual setup for its internal clock, we must reset the internal clock through the NTP.
- Print the kernel ring buffer: It is used to examine or control the kernel ring buffer. The program helps users to print out their boot-up messages instead of copying the messages by hand.
- Main menu: Go back to the main menu.

- **Change admin password**

Besides supporting the use of console management interface through the connection of null modem, the system also supports the SSH online connection for the setup. When using a null modem to connect to the system console, we do not need to enter administrator's password to enter the console management interface. The username and password is needed instead when connecting the system by



SSH.

The username is “admin” and the default password is also “admin”, which is the same as for the web management interface. Password can also be changed here. If administrators forget their password and are unable to log in to the management interface from the web or the remote end of the SSH, they can still use the null modem to connect to the console management interface and set the administrator's password again.

**Caution:**

*Although it does not require a username and password for the connection via the serial port, the same management interface can be accessed via SSH. Therefore, we recommend you to immediately change the HSG Admin username and password after your first login to the system.*

- **Reload factory default**

Choosing this option will reset the system configuration to factory defaults.

- **Restart the HSG**

Choosing this option will restart the HSG.

## 11 System Status and Reports

### 11.1 Viewing the Status

This section includes **System**, **Interface**, **Routing Table**, **Current Users**, **Session List**, **User Logs**, **Logs**, **DHCP Lease** and **Report & Notification** to provide system status information and online user status.

#### 11.1.1 System Status

To view System Status, go to: **Status >> System**.

This section provides an overview of the system for the administrator.

System Setting Overview		
Up Time		2:18
Firmware Version		2.00.00
Build		1.18-1.5489.2.90
System Name		Wireless Hotspot Gateway
Start Page URL		http://www.google.com
SYSLOG server 1		N/A:N/A
SYSLOG server 2		N/A:N/A
Proxy Server		Disabled
Warning of Internet Disconnection		Disabled
SNMP		Disabled
User Logs	Retained Days	3 days
	Receiver's E-mail Address(es)	receiver@4ipnet.com
		N/A
		N/A
		N/A
System Time	NTP Server	tock.usno.navy.mil
	Time	2012/06/22 13:01:43 +0800
User Session Control	Idle Time Out	10Min(s)
	Multiple Login	Disabled
DNS	Preferred DNS Server	168.95.1.1
	Alternate DNS Server	N/A

The description of the above-mentioned table is as follows:

<u><b>Item</b></u>		<u><b>Description</b></u>
<b>Up Time</b>		The total time system has operated
<b>Firmware Version</b>		The present firmware version of the HSG
<b>Build</b>		The present build number of the firmware
<b>System Name</b>		The system name. The default is Wireless Hotspot Gateway
<b>Start Page URL</b>		The preset URL upon users' initial successful login
<b>SYSLOG server- System Log</b>		The IP address and port number of the external SYSLOG Server. <b>N/A</b> means that it is not configured
<b>SYSLOG server- On-demand Users Log</b>		The IP address and port number of the external SYSLOG Server. <b>N/A</b> means that it is not configured
<b>Proxy Server</b>		Shows status of built-in Proxy Server
<b>Warning of Internet Disconnection</b>		Shows whether the status for the connection at WAN is normal or abnormal ( <b>Internet Connection Detection</b> ) and all online users are allowed/disallowed to log in the network
<b>SNMP</b>		Shows status of option to enable or disabled system info retrieval via SNMP protocol
<b>User Log</b>		The maximum number of days for the system to retain the users' information
<b>SNMP</b>		The email address to which the user log information will be sent
<b>System Time</b>	<b>NTP Server</b>	The network time server that the system is set to align
	<b>Time</b>	The system time is shown as the local time
<b>User Session Control</b>	<b>Idle Time Out</b>	The minutes allowed for the users to be inactive before their account expires automatically
	<b>Multiple Login</b>	Enabled/disabled stands for the current setting to allow/disallow multiple login from the same local account
<b>DNS</b>	<b>Preferred DNS Server</b>	IP address of the preferred DNS Server
	<b>Alternate DNS Server</b>	IP address of the alternate DNS Server

## 11.1.2 Interface Status

To view Interface Status, go to: **Status >> Interface**.

This section provides an overview of the interface for the administrator including **WAN**, **Zone - Private** and **Zone - Public**.

Network Interface		
Select Interface	WAN ▾	
WAN	Mode	STATIC
	MAC Address	00:1F:D4:01:DC:39
	IP Address	10.30.40.8
	Subnet Mask	255.255.0.0
	IPv6 Address	N/A
	IPv6 Prefix	N/A

Network Interface		
Select Interface	Private ▾	
Service Zone - Private	Mode	NAT
	MAC Address	00:1F:D4:01:DC:3A
	IP Address	192.168.1.254
	Subnet Mask	255.255.0.0
	IPv6 Address	N/A
Service Zone - Private DHCP Server	Status	Enabled
	WINS IP Address	N/A
	Start IP Address	192.168.1.1
	End IP Address	192.168.1.100
	Lease Time	1440 Min(s)
VAP 1	BSSID	00:1F:D4:01:DC:3B
	ESSID	HSG260-D
	SecurityType	NONE
	Online	0

Network Interface		
Select Interface	Public ▼	
Service Zone - Public	Mode	NAT
	MAC Address	06:1F:D4:01:DC:3A
	IP Address	172.21.0.254
	Subnet Mask	255.255.0.0
	IPv6 Address	N/A
Service Zone - Public DHCP Server	Status	Enabled
	WINS IP Address	N/A
	Start IP Address	172.21.0.1
	End IP Address	172.21.0.100
	Lease Time	1440 Min(s)
VAP 2	BSSID	06:1F:D4:01:DC:3B
	ESSID	HSG260
	SecurityType	NONE
	Online	0

The description of the above-mentioned table is as follows:

<u>Item</u>		<u>Description</u>
<b>WAN</b>	<b>Mode</b>	Shows WAN interface settings: Static, Dynamic, PPPoE or PPTP
	<b>MAC Address</b>	The MAC address of the WAN port
	<b>IP Address</b>	The IP address of the WAN port
	<b>Subnet Mask</b>	The Subnet Mask of the WAN port
	<b>IPv6 Address</b>	The IPv6 address of WAN port if applicable
	<b>IPv6 Prefix</b>	The IPv6 prefix if applicable
<b>Zone - General</b>	<b>Mode</b>	The operation mode of the zone
	<b>MAC Address</b>	The MAC address of the zone
	<b>IP Address</b>	The IP address of the zone
	<b>Subnet Mask</b>	The Subnet Mask of the zone
	<b>IPv6 Address</b>	The IPv6 address of the zone if applicable
<b>Zone - DHCP</b>	<b>Status</b>	Enable/disable stands for the status of the DHCP server in this zone
	<b>WINS IP Address</b>	The WINS server IP on DHCP server. <b>N/A</b> means that it is not configured
	<b>Start IP Address</b>	The start IP address of the DHCP IP range
	<b>End IP address</b>	The end IP address of the DHCP IP range
	<b>Lease Time</b>	Minutes of lease time of the IP address
<b>Zone - VAP</b>	<b>BSSID</b>	The BSSID of this zone
	<b>ESSID</b>	The ESSID of this zone
	<b>Security Type</b>	The current security type of this zone
	<b>Associated Clients</b>	The number of associated clients in this zone

### 11.1.3 Routing Table

To view System Status, go to: **Status >> Routing Table**.

All the **Policy** Routing rules and **Global Policy** Routing rules for both IPv4 and IPv6 will be listed here. It will also show the **System** Routing rules specified by each interface. The following depicts an image for the IPv4 Routing Table.

Policy 1			
Destination	Subnet Mask	Gateway	Interface
Policy 2			
Destination	Subnet Mask	Gateway	Interface
Policy 3			
Destination	Subnet Mask	Gateway	Interface
Policy 4			
Destination	Subnet Mask	Gateway	Interface
Policy 5			
Destination	Subnet Mask	Gateway	Interface
Interface			
Destination	Subnet Mask	Gateway	Interface
192.168.1.0	255.255.255.0	0.0.0.0	Private
192.168.11.0	255.255.255.0	0.0.0.0	Public
169.254.0.0	255.255.0.0	0.0.0.0	Private
10.29.0.0	255.255.0.0	0.0.0.0	WAN
System			
Destination	Subnet Mask	Gateway	Interface
0.0.0.0	0.0.0.0	10.29.0.1	WAN

- **Policy 1~5:** Shows the information of the individual Policy from 1 to 5.
- **Global Policy:** Shows the information on the Global Policy.
- **System:** Shows the information on the system administration.
  - **Destination:** The Destination IP address.
  - **Subnet Mask:** The Subnet Mask of the IP address range.
  - **Gateway:** The Gateway IP address of the interface.
  - **Interface:** Including **WAN**, **Private** and **Public**.

### 11.1.4 Current Users

To view Current Users, go to: **Status >> Current Users**.

On this page, each online user's information including **Username, IP Address, MAC Address, IPv6 Address, Pkts In, Bytes In, Pkts Out, Bytes Out, Service Zone/VLAN, Group/Policy, Authentication Method/Authentication Database, Online/Idle** and **Kick Out** will be shown. Administrators can force out a specific online user by clicking the hyperlink of **Kick Out**. Click **Refresh** to update the current users list.

Online Users List							
No.	Username	MAC Address	Pkts In/Out	SZ / VLAN	Auth. Method	Online (Sec.)	Kick Out
	IP Address	IPv6 Address	Bytes In/Out	Group / Policy	Auth. Database	Idle (Sec.)	

(Total:0) [First](#) [Prev](#) [Next](#) [Last](#) Go to Page  (Page:1/1) Row per Page:

[Refresh](#)

**Non-Login Devices** shows users that have acquired an IP address from the system's DHCP server but have not yet been authenticated, either under the LAN or remotely tunneled site. This feature is designed for administrators to keep track of systems' resources from being exhausted. The list shows the client's **MAC Address, IP Address** and associated **VLAN ID**, as well as the **Service Zone**.

Non-Login Device List			
MAC Address	IP Address	VLAN ID	Service Zone

(Total:0) [First](#) [Prev](#) [Next](#) [Last](#) Go to Page  (Page:1/1) Row per Page:

[Refresh](#)

The **On-demand Roaming Out User List** shows the users that are authenticated by other gateways using this HSG's On-demand database as RADIUS database.

On-demand Roaming Out User List						
Name	IP Address	MAC Address	NAS ID	Session Time	Bytes In / Out	Login Time
					Pkts In / Out	Last Update Time

(Total:0) [First](#) [Previous](#) [Next](#) [Last](#) Go to Page  (Page:1/1) Row per Page:

[Refresh](#)

[Refresh](#)



### 11.1.5 Session List

This page allows the administrator to inspect sessions currently established between a client and the system. Each result displays the IP and Port values of the Source and Destination. You may define the filter conditions and display only the results you desire.

Session List							
No	Protocol	Source IP	Port	Destination IP	Port	State	Timeout
1	udp	192.168.1.254	36031	168.95.1.1	53	UNREPLIED	1
2	udp	192.168.1.254	49431	168.95.1.1	53	UNREPLIED	0

### 11.1.6 User Log

To view User Log, go to: **Status >> User Log**.

This page is used to check the traffic history of the HSG. The history of each day will be saved separately in the RAM memory for at least 3 days (72 full hours). The system also keeps a cumulated record of the traffic data generated by each user in the last 2 calendar months.

Users Log		
Date	Size (Byte)	
<a href="#">2012-07-10</a>	131	
<a href="#">2012-07-09</a>	131	
<a href="#">2012-07-08</a>	131	
On-demand Users Log		
Date	Size (Byte)	
<a href="#">2012-07-10</a>	186	
<a href="#">2012-07-09</a>	186	
<a href="#">2012-07-08</a>	186	
Roaming Out User Log		
Date	Size (Byte)	
<a href="#">2012-07-10</a>	106	
<a href="#">2012-07-09</a>	106	
<a href="#">2012-07-08</a>	106	
Roaming In User Log		
Date	Size (Byte)	
<a href="#">2012-07-10</a>	173	
<a href="#">2012-07-09</a>	173	
<a href="#">2012-07-08</a>	173	
Monthly Network Usage of Local User		
Month	No. of Entries	Usage Data
<a href="#">2012-07</a>	0	<a href="#">Download</a>
<a href="#">2012-06</a>	0	<a href="#">Download</a>

**Caution:**

Since the history is saved in the RAM memory, if you need to restart the system at the same time, please keep the history, manually by copying and saving the traffic history information before restarting.

If the **Receiver E-mail Address(es)** has been entered under the **Notification Settings** page, the system will automatically send out these history information to that specified email address.

- **Users Log**

All user activities on the system within 72 hours excluding other user logs such as On-demand user log are recorded; in date and time order. Each line is a traffic history record consisting of 17 fields, including **Date**, **Type**, **Name**, **IP**, **IPv6**, **MAC**, **Pkts In**, **Bytes In**, **Pkts Out**, **Bytes Out**, and other information of the user activities.

- **On-demand User Log**

Each line is a on-demand user log record consisting of 25 fields, **Date**, **System Name**, **Type**, **Name**, **IP**, **MAC**, **Pkts In**, **Bytes In**, **Pkts Out**, **Bytes Out**, **Activation Time**, **1st Login Expiration Time**, **Remark**, and other information, of On-demand user activities are included.

- **Roaming Out User Log**

Each line is a roaming out traffic history record consisting of 14 fields, **Date**, **Type**, **Name**, **NSID**, **NASIP**, **NASPort**, **UserMAC**, **SessionID**, **SessionTime**, **Bytes in**, **Bytes Out**, **Pkts In**, **Pkts Out** and **Message**, of user activities.

- **Roaming In User Log**

Each line is a roaming in traffic history record consisting of 22 fields, **Date**, **Type**, **Name**, **NSID**, **NASIP**, **NASPort**, **UserMAC**, **UserIP**, **SessionID**, **SessionTime**, **Bytes in**, **Bytes Out**, **Pkts In**, **Pkts Out**, **Message**, and other information of user activities are included.

### 11.1.7 Local User Monthly Network Usage Report

To view Local User Monthly Network Usage, go to: **Status >> User Log**.

- **Monthly Network Usage of Local User**

The system keeps a cumulated record of the traffic data generated by each Local user in the last 2 calendar months. Each line in the 'Monthly Network Usage of Local User' record(hyperlinked) consists of 6 fields,

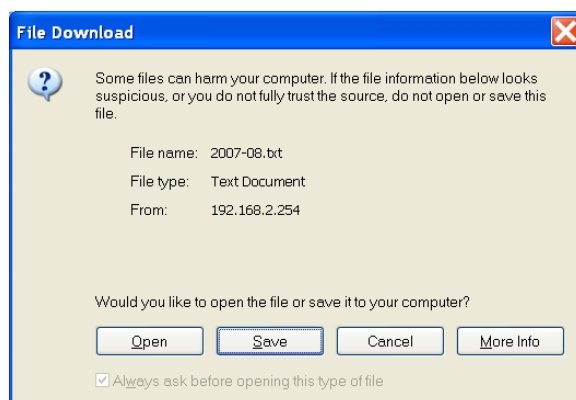
**Username, Connection Time Usage, Packets In, Bytes In, Packets Out and Bytes Out** of user activities.

- **Username:** Username of the local user account.
- **Connection Time Usage:** The total time used by the user.
- **Pkts In/ Pkts Out:** The total number of packets received and sent by the user.
- **Bytes In/ Bytes Out:** The total number of bytes received and sent by the user.

- **Download Monthly Network Usage of Local User:** Click the **Download** button for outputting the report manually to a local database.

Monthly Network Usage of Local User		
Month	No. of Entries	Usage Data
<a href="#">2009-04</a>	1	<a href="#">Download</a>

A warning message will then appear. Click **Save** to download the record into .txt format.



### 11.1.8 System Related Logs

To configure System related logs, go to: **Status >> Logs**.

This page displays the system's local log information since system boot up. Administrators can examine the log entries of various events. However, since all these information are stored on volatile memory, they will be lost during a restart/reboot operation. Therefore if the log information needs to be documented, the administrator will need to make back up manually.

Logs	
System Log	Show
Web Log	Show
UAMD Log	Show
RADIUS Server Log	Show
On-demand User Billing Report Log	Show
Configuration Change Log	Show

- **System Log**  
This page displays system related logs for event tracing.
- **Web Log**  
This page shows which of the web pages have been accessed on the HSG's built-in web server.
- **UAMD Log**  
This page displays the UAM related information output from the UAM daemon.
- **RADIUS Server Log**  
This page displays the RADIUS messages that pass through the HSG gateway.
- **On-demand Billing Report Log**  
This page displays a summary of On-demand account transactions.
- **Configuration Change Log**  
This page shows the account and IP of the user that has made configuration changes to the HSG.

### 11.1.9 DHCP Lease

To configure DHCP Lease related logs, go to: **Status >> DHCP Lease**.

The DHCP IP lease statistics can be viewed after clicking on **Show** Statistics List in this page.

- Statistics of offered list**

Valid lease counts of the **Last 10 Minutes**, **Hours** and **Days** are shown here. The header 1 ~ 10 are the unit multipliers. For instance the number under column 2 indicates the lease count in the last 20 minutes/hours/days, the number under column 3 indicated the lease count in the last 30 minutes/hours/days and so on.

- Statistics of expired list**

IP leased to clients that have expired in the **Last 10 Minutes**, **Hours** and **Days** are shown here. The header 1 ~ 10 are the unit multipliers. For instance the number under column 2 indicates the expired count in the last 20 minutes/hours/days, the number under column 3 indicates the expired count in the last 30 minutes/hours/days and so on.

Statistics of offered list										
	1	2	3	4	5	6	7	8	9	10
Last 10 Minutes	1	0	0	0	0	0	0	0	0	0
Last 10 Hours	0	2	22	3	1	0	0	1	2	2
Last 10 Days	51	0	0	0	0	0	0	0	0	0

Statistics of expired list										
	1	2	3	4	5	6	7	8	9	10
Last 10 Minutes	0	0	0	0	0	0	0	0	0	0
Last 10 Hours	0	0	1	0	0	0	0	0	2	1
Last 10 Days	10	0	0	0	0	0	0	0	0	0

- DHCP Lease List**

Valid IP addresses issued from the DHCP Server and related information of the client using this IP address is displayed here.

DHCP Logs	
Statistics List	<input type="button" value="Show"/>
DHCP Lease Log	<input type="button" value="Show"/>

DHCP Lease List					
No.	IP Address	MAC Address	Host Name	Vlan	Lease Expires
1	192.168.1.4	00:40:96:a1:af:dd	x30-ac42	0	2011/03/19 17:13:49
2	192.168.1.41	00:1d:73:3b:73:3e	AC109-NB	0	2011/03/19 18:32:35
3	192.168.1.76	cc:08:e0:04:80:cf	*	0	2011/03/19 19:01:04

## 11.2 Notification

To configure Notification, go to: **Status >> Report & Notification**.

The HSG can automatically send the notifications of **Monitor IP Report, Users Log, On-demand User Log, Roaming Out Users Log, Roaming In Users Log, Firewall Log, Session Log** and **On-demand User Billing Report** to up to 5 particular e-mail addresses. A trial email is provided by the system for validation.

Secondly, the system supports recording of **Users Log, On-demand Users Log, Roaming Out Users Log, Roaming In Users Log, Session Log, Firewall Log**, and **Local HTTP Web Log, HTTP Web Log** and **DHCP Server Log** via external SYSLOG servers.

Thirdly, **Users Log, On-demand Users Log, Roaming Out Users Log, Roaming In Users Log, Session Log, On-demand User Billing Report, Local HTTP Web Log, HTTP Web Log, WMI Configuration Log, DHCP Lease Log** and **Traffic Report** can also be configured to be sent to an external FTP server. In addition, the **Event Log** section on WMI displays clients associate and disassociate messages.

### 11.2.1 E-Mail

SMTP Settings	
Receiver E-mail Address 1	<input type="text"/>
Receiver E-mail Address 2	<input type="text"/>
Receiver E-mail Address 3	<input type="text"/>
Receiver E-mail Address 4	<input type="text"/>
Receiver E-mail Address 5	<input type="text"/>
Sender E-mail Address	<input type="text"/> *
SMTP Server	<input type="text"/> *
SMTP Port	25 *
SMTP over SSL	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
SMTP Authentication	None ▼

- **SMTP Settings:**

- **Receiver Email Address (es):** Up to 5 e-mail addresses can be set up to receive the notification. There are eight kinds of notification for selection -- Monitor IP Report, Users Log, On-demand Users Log, Roaming Out Users Log, Roaming In Users Log, Session Log, Firewall Log, and On-demand Billing Report, check the selection box to choose the type of notification to be sent.
- **Sender Email Address:** The e-mail address of the administrator in charge of monitoring. This will show up as the sender's e-mail.
- **SMTP Server:** The IP address of the sender's SMTP server.
- **SMTP over SSL:** Enable or Disable SMTP over SSL for additional security
- **SMTP Authentication:** The system provides four authentication methods, **Plain**, **Login**, **CRAM-MD5** and **NTLMv1**, or "None" to use none of the above. Depending on which authentication method is selected, enter the **Account Name**, **Password** and **Domain**.
  - **NTLMv1** is not currently available for general use.
  - **Plain** and **CRAM-MD5** are standardized authentication mechanisms while **Login** and **NTLMv1** are Microsoft proprietary mechanisms. Only **Plain** and **Login** can use the UNIX login password. Netscape uses **Plain**. Outlook and Outlook express use **Login** as default, although they can be set to use **NTLMv1**.
  - Pegasus uses **CRAM-MD5** or **Login** however the method to be used can not be configured.

- **Notification E-mail Settings:**

- **Receiver Email Address (es):** Up to 5 e-mail addresses can be set up to receive the notification. There are eight kinds of notification for selection -- Monitor IP Report, Users Log, On-demand Users Log and Session Log, check the selection box to choose the type of notification to be sent.
- **Interval:** The time interval to send the e-mail report.



## 11.2.2 SYSLOG

- **SYSLOG Server Settings:** There are 9 types of SYSLOG supported: **Users Log, On-demand Users Log, Roaming Out Users Log, Roaming In Users Log, Session Log, Firewall Log, Local HTTP Web Log, HTTP Web Log** and **DHCP Server Log**. Enter the IP address and Port number to specify the SYSLOG server where the report should be sent to.

Except for System Log, each supported log may be assigned *Tag* information as well as SYSLOG standard attributes *Severity* to meet the filtering requirements on the SYSLOG Server. HTTP Web Log can further select which Service Zone Web interface information to log. For each type of log information, whenever an incident occurs and data is updated, the updated log will be immediately sent to the configured SYSLOG server.

SYSLOG Settings			
<b>SYSLOG</b>	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled		
<b>SYSLOG Destinations</b>	SYSLOG Server 1	IP Address: <input type="text"/>	Port: <input type="text"/>
	SYSLOG Server 2	IP Address: <input type="text"/>	Port: <input type="text"/>
<b>SYSLOG Level</b>	emergency ▼		

**Note:**

When the number of a user's session (TCP and UDP) reaches the session limit specified in the policy, a record will be logged to this SYSLOG server.

### 11.2.3 FTP

This configuration page allows the setting of FTP Server to send, including the types of Roaming Out Users Log, Roaming In Users Log, On-demand User Billing Report, Session Log, Local HTTP Web Log, HTTP Web Log, WMI Configuration Log, DHCP Lease Log, Traffic Report, User Log or On-demand User Log based on Server Folder and Interval.

FTP Settings	
FTP Destination	IP Address: <input type="text"/> Port: <input type="text"/>
	Anonymous <input checked="" type="radio"/> Yes <input type="radio"/> No
	FTP Setting Test <input type="button" value="Send Test Log"/>

- **FTP Server Settings**

**FTP Destination:** Configures the common settings of the FTP server that the logs will be sent to. Further settings can be configured under **Notification Settings**, which includes the following:

- **IP Address/Port:** IP address and port number of FTP server.
- **Anonymous:** Check option "Yes" if the FTP server does not need ID credentials, otherwise check option "No" and fill in the necessary *Username* and *Password*.
- **FTP Setting Test:** To test if the FTP settings are correct or not.
- **User Log:** Records the User Log of the system to a specific FTP server.
- **On-demand User Log:** Records the On-demand User Log of the system to a specific FTP server.
- **Roaming Out / In Users Log:** Records the Roaming Out / In Users Log to a specific FTP server.
- **Session Log:** Log each connection created by users and track the source IP/Port and destination IP/Port. Session Log will be sent to the FTP server automatically in every defined interval in Session Log email notification. Session Log allows uploading the log file to a FTP server periodically. The maximum log file size is 256K. The log file will also be sent to the FTP server once the file size reaches its maximum size.
- **On-demand User Billing Report:** Records the On-demand User Billing Report to a specific FTP server.
- **Local HTTP Web Log / HTTP Web Log:** Records the URL of websites visited by users accessing the internet via the HSG to a specific FTP server.
- **WMI Configuration Log:** Records the WMI Configuration Log of the system to a specific FTP server.
- **DHCP Lease Log:** Records the DHCP Lease Log of the system to a specific FTP server.
- **Traffic Report:** Records the Traffic Report of the system to a specific FTP server.

Notification Settings									
	Receiver E-mail Address(es)					SYSLOG	FTP	Interval	
	1	2	3	4	5				
Monitor IP Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	N/A	N/A	1 Hour ▼
Users Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	1 Hour ▼
On-demand Users Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	1 Hour ▼
Roaming Out Users Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	1 Hour ▼
Roaming In Users Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	1 Hour ▼
Session Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	1 Hour ▼
Firewall Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	<input type="checkbox"/> <input type="button" value="Detail"/>	N/A	1 Hour ▼
On-demand User Billing Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Detail"/> / <input type="button" value="Send"/>	N/A	<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> Daily Settle Time 0 ▼ <input type="checkbox"/> Weekly Settle Time Sun ▼ <input type="checkbox"/> Monthly Settle Time 1 ▼
Local HTTP Web Log	N/A					<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> <input type="button" value="Detail"/>		1 Hour ▼
HTTP Web Log	N/A					<input type="checkbox"/> <input type="button" value="Detail"/>	<input type="checkbox"/> <input type="button" value="Detail"/>		1 Hour ▼
WMI Configuration Log	N/A					N/A	<input type="checkbox"/> <input type="button" value="Detail"/>		1 Hour ▼
DHCP Server Log	N/A					<input type="checkbox"/> <input type="button" value="Detail"/>	N/A		N/A
DHCP Lease Log	N/A					N/A	<input type="checkbox"/> <input type="button" value="Detail"/>		1 Hour ▼
Traffic Report (Text) <input type="checkbox"/> Service Zone	N/A					N/A	<input type="checkbox"/> <input type="button" value="Detail"/>		1 Hour ▼

- **Server Folder:** The folder in the configured FTP Server in which the sent Log will be placed.
- **Interval:** The time interval at which the Log will be sent.
- **Logged Interface:** The check box of Public or Private shall be checked to enable logging the HTTP Web Log of this interface.

## 12 Advanced Applications

### 12.1 Upload/Download Local User Accounts

To Upload / Download Local Users Accounts, go to: **Users >> Authentication**, click **Configure** for the **Local** Authentication Database. Or click **Quick Links >> Local User Management** from system Home page.

Local User Database Settings	
<a href="#">Local User List</a>	
<b>Account Roaming Out</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (Local user database will be used as authentication database for roaming out users.)
<b>802.1X Authentication</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (Local user database will be used as internal RADIUS database for 802.1X-enabled LAN devices, such as AP and switch.)

- **Upload User:** Click **Upload User** to enter the **Upload User from File** interface. Click the **Browse** button to select the text file for uploading user accounts, then click **Upload** to complete the upload process.

Authentication | Black List | Group | Policy | Schedule | Firewall | QoS | Specific Route | Privilege | Additional Control | Operator

Main Menu > Users > Authentication > Option > Local > Local User List

Add User | **Upload User** | Download User

Search

Local User List					
Username	Password	Applied Group	MAC Address		Del All
		Account Status	Begin Date	End Date	
Remark					
<a href="#">user1</a>	user1	Group 1			<a href="#">Delete</a>
		Valid			

(Total:1/3000) [First](#) [Prev](#) [Next](#) [Last](#) Go to Page  (Page:1/1) Row per Page:

**Note 1:** The format of each line is "Username, Password, MAC Address, Applied Policy, Remark" without the quotes. There must be no space between the fields and commas. The MAC field could be omitted but the trailing comma must be retained. When adding user accounts by uploading a file, existing accounts in the embedded database that are also defined in the data file will not be replaced by the new ones.

**Note 2:** Only "0~9", "A~Z", "a~z", ".", "-", and "\_" are acceptable for password field.

Upload User from File	
<b>File Name</b>	<input type="text"/> <a href="#">Browse...</a>
<input type="button" value="Upload"/>	

When the system uploads a file, any format error or duplicated username will terminate the uploading process and no account will be uploaded. Please correct the format in the uploading file or delete the duplicated user accounts in the database then try again.

- **Download User:** Use this function to create a .txt file with all **Local** user account information and save it on a disk.

Authentication
Black List
Group
Policy
Schedule
Firewall
QoS
Specific Route
Privilege
Additional Control
Operator

[Main Menu](#) > [Users](#) > [Authentication](#) > [Option](#) > [Local](#) > [Local User List](#) > Download

Download User to File				
Username	Password	Applied Group	MAC Address	
		Expire Time Enabled	Begin Date	End Date
		Remark		
user1	user1	1		
		Disable		

[Download](#)

## 12.2 RADIUS Advanced Settings

To configure RADIUS Advanced Settings, go to: **Users >> Authentication**. Click **Configure** for the **RADIUS** Authentication Database. .

### ➤ Complete vs. Only ID vs. Leave Unmodified

For RADIUS authentication, there is an option to send the complete username with postfix or username only.

**Username Format:** When the **Complete** option is checked, both the username and postfix will be transferred to the RADIUS server for authentication. On the other hand, when the **Only ID** option is checked, only the username will be transferred to the external RADIUS server for authentication. If the **Leave Unmodified** option is selected, the system will send the username to **Default Auth Server** set in **802.1X** configuration page for authentication.

### ➤ NAS Identifier

System will send this value to the external RADIUS server, if needed by the external RADIUS server.

### ➤ NAS Port Type

System will send this value to the external RADIUS server, if needed by the external RADIUS server.

### ➤ Class-Group Mapping

This function is to assign a *Policy* to a RADIUS class attribute sent from the RADIUS server. When the clients classified by RADIUS class attributes log into the system via the RADIUS server, each client will be mapped to its assigned Group and Policy.

RADIUS Group Mapping - Server 2				
<input type="radio"/> Enable <input checked="" type="radio"/> Disable				
No.	Class Attribute Value	Group	Remark	
1	<input type="text"/>	Group 1 ▼	<input type="text"/>	
2	<input type="text"/>	Group 1 ▼	<input type="text"/>	
3	<input type="text"/>	Group 1 ▼	<input type="text"/>	
4	<input type="text"/>	Group 1 ▼	<input type="text"/>	
5	<input type="text"/>	Group 1 ▼	<input type="text"/>	

## 12.3 Roaming Out

To configure local user Roaming Out, go to: **Users >> Authentication**, click **configure** for **Local**.

Under certain configurations, the HSG can act as a RADIUS server for Roaming Out local users logged from another system. The Local User database will act as the RADIUS user database.

- **Account Roaming Out & 802.1X Authentication:** When Account Roaming Out is enabled; the link of *Roaming Out & 802.1X Client Device Settings* will be available to define the client device authorized to roam by entering the IP address, Subnet Mask, and Secret Key.

Local User Database Settings	
<a href="#">Local User List</a>	
<b>Account Roaming Out</b>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable (Local user database will be used as authentication database for roaming out users.)
<b>802.1X Authentication</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (Local user database will be used as internal RADIUS database for 802.1X-enabled LAN devices, such as AP and switch.)
<a href="#">RADIUS Client Device Settings</a>	

802.1X Auth Setting	
<b>Default Auth Server</b>	Server 1 (Postfix: local) ▼ (The Auth server is for username only with ID, e.g. user1.)

RADIUS Client Device Settings					
No.	Type	IP Address	Subnet Mask	Secret Key	SNMP Community
1	Roaming Out ▼	127.0.0.0	255.0.0.0 (/8) ▼	*****	
2	Disable ▼		255.255.255.255 (/32) ▼		
3	Disable ▼		255.255.255.255 (/32) ▼		
4	Disable ▼		255.255.255.255 (/32) ▼		
5	Disable ▼		255.255.255.255 (/32) ▼		

Click the hyperlink **Roaming Out & 802.1x Client Device Settings** to enter the **Roaming Out & 802.1X Client Device Settings** interface. Choose **Roaming Out** and enter the Roaming Out client's IP address and network mask and then click **Apply** to complete the settings.

In the other system, such as another HSG gateway, set up its RADIUS server to this HSG with the same postfix, and the local user in this HSG would be able to log in successfully from another HSG by RADIUS authentication.



## 12.4 Customizable Pages

To configure Custom Pages, go to: **System >> Service Zones**, click **Configure** in **Public** zone.

There are several user login and logout pages that can be customized by the administrator.

You can select **Default Page**, **Template Page**, **Uploaded** or **External Page**.

Custom Pages	Disclaimer Page	<a href="#">Configure</a>
	Login Page	<a href="#">Configure</a>
	Logout Page	<a href="#">Configure</a>
	Login Success Page	<a href="#">Configure</a>
	Login Failed Page	<a href="#">Configure</a>
	Login Success Page for On-demand User	<a href="#">Configure</a>
	Logout Success Page	<a href="#">Configure</a>
	Logout Failed Page	<a href="#">Configure</a>

- **Disclaimer Page:**

The **Disclaimer Page** is for the hotspot owner or MIS staff who wants to display 'terms of use' or announcement information before the user login page. Click **Configure**, the setup page will appear. An unauthorized client will receive a disclaimer page once opening the web browser. If a client selects "I agree" and clicks **Next**, then he or she will proceed to the User Login Page for client to login with username and password. The Disclaimer Page can be Enabled at: **System >> General**

- 

- **Template Page:**

To utilize the template user pages stored locally in the system, choose **Template Page** and configure the necessary settings as follows. Click **Select** (hyperlinked) to pick up a color for each item and fill in your copyright message. You can also upload a Logo image file for your template with the **Preview and Edit the Image File** button. Click **Configure**, the setup page will appear for the corresponding page where you can change the text displayed as you wish. After setting is finished, click **Preview** to see the result. If you are happy with the customized pages, click **Apply** to activate the changes made.

- **Uploaded Page:**

Choose the **Uploaded Page** option if you wish to upload your own html coded page. Click **Configure** for each custom page and upload the HTML file and corresponding image files and click **Apply**.

After applying the setting, the new login page can be previewed by clicking **Preview** button.



- **External Page:**

Choose the **External Page** option if you wish to use user pages located on a designated website. Click **Configure** for each custom page and enter the URL of its corresponding external login page and click **Apply**. After applying the setting, the new login page can be previewed by clicking **Preview** button.

## Appendix A. Policy Priority

### ▪ Global Policy, Authentication Policy and User Policy

The HSG supports multiple Policies, including one **Global Policy** and 5 individual **Policies** can be assigned to different **Authentication Server**. **Global Policy** is the system's universal policy and is applied to all clients, while other individual Policies can be selected and defined to be applied to any Authentication Server. For some authentication, such as Local and RADIUS, users can be assigned to different Policies individually. One user may be applied to a different policy at the same time. Which policy is actually applied to this user?

The Policy Priority is enforced as follows:

#### **User Policy >> Authentication Policy >> Global Policy**

Now, let us discuss the different user policy types:

- For Local and RADIUS, users can be assigned to different policies individually. For example, a Local user, user01, is assigned to Policy1 and the Local Authentication Policy2. When user01 logs in to Public Zone, user01 will be governed under Policy1. This is a common case for users that can be assigned a Policy individually.
- For Local and RADIUS, if these users are not assigned under any User Policy individually, they will be governed under the same policy as others within the same authentication server. For example, if the Local Authentication is assigned to Policy3, a Local user01 when logged in to Public Zone will get Policy3. This is another common case for users that are assigned Policy by the authentication server.
- If a User is not assigned a Policy individually and the authentication server is also not assigned a Policy, then the Global Policy will be applied to all users. For example, a Local user, user01, is assigned to *None* Policy and the Local Authentication is also assigned to *None Policy* on User list. Then user01 logged in to Public Zone will be applied with the Global Policy.

In conclusion, the Global Policy has the lowest policy priority; the User Policy has the highest priority.

## Appendix B. WDS Management

Each of the Public Zone (Public Zone, Service Zone 2, Service Zone 3) of the HSG supports up to 2 WDS links. WDS (Wireless Distribution System) is a function used to connect APs (Access Points) wirelessly to extend wireless coverage. The WDS management function of the system can help administrators to setup two WDS links. To configure WDS, go to: **System >> Service Zones**, click **Configure** in **Public Zone/Service Zone 2/Service Zone 3**.

General WAN WAN Traffic IPv6 LAN Port Mapping **Service Zones**

[Main Menu](#) > [System](#) > Service Zone

Service Zone Settings						
Service Zone Name	Applied Policy	IP Address	Network Alias	DHCP Pool	LAN Port Mapping	Details
	Default Authen Option	IPv6 Address			Status	
Private	Policy 1	192.168.1.254	N/A	192.168.1.1 ~ 192.168.1.100		<a href="#">Configure</a>
	Disabled	2001:CB46:5359:1::1			Enabled	
Public	Policy 1	172.21.0.254	N/A	172.21.0.1 ~ 172.21.0.100		<a href="#">Configure</a>
	Server 1	N/A			Enabled	

**WDS** (Wireless Distribution System) is a function used to connect **APs** (Access Points) wirelessly. The WDS management function of the system can help administrators to setup two WDS links per RF Card.

WDS1 Settings : Public	
<b>Basic</b>	WDS Status : <input type="radio"/> Enable <input checked="" type="radio"/> Disable MAC Address of Remote AP : <input type="text"/>
<b>Security</b>	Security Type : <input type="text" value="WEP"/> WEP Key Length : <input type="text" value="64 bits"/> WEP Key Format : <input type="text" value="ASCII"/> WEP Key : <input type="text" value="12345"/>

WDS2 Settings : Public	
<b>Basic</b>	WDS Status : <input type="radio"/> Enable <input checked="" type="radio"/> Disable MAC Address of Remote AP : <input type="text"/>
<b>Security</b>	Security Type : <input type="text" value="TKIP/AES"/> Cipher Suite : <input type="text" value="TKIP (WPA)"/> Pre-shared Key / Pass-phrase : <input type="text" value="12345678"/>

- **WDS Status:** Select **Enable** to activate this WDS link.
- **MAC Address of Remote AP:** Enter the MAC of the remote AP that generates a WDS link with the HSG.

- **Security Type:**
  - **WEP:** **WEP Key Length** may be *64 bits*, *128 bits* or *152 bits*; and **WEP Key Format** can be *ASCII* or *HEX*. Enter the applicable **WEP Key**.
  - **WPA-PSK:** Select the preferred ciphering method, *TKIP* or *AES* and enter the **PSK / Pass-phrase**.

## Appendix C. RADIUS Accounting

This section will briefly introduce the basic configuration of RADIUS server to work with VSA for controlling the maximum client volume usage (upload; download or upload + download traffic).

This **VSA** will be sent from the RADIUS server to the gateway along with an **Access-Accept** packet. In other words, when the external RADIUS server accepts the request, it will reply not only an **Access-Accept** but also a maximum value in bytes each user is allowed to transfer. This value can be the maximum upload traffic, the maximum download traffic, or the sum of the download and upload traffics in bytes per user. The gateway will check this value every minute; if the user traffic reaches this value, the gateway will stop the session of this user and send a "Stop" to RADIUS server.

### 1. Description

VSA is designed to allow vendors to support their own extended Attributes which are not covered in common attributes. It MUST not affect the operation of the RADIUS protocol.

The **Attribute Type** of VSA is "26" and the "**Vendor ID**" should be determined before proceeding to RADIUS configuration; in this example; the **Vendor ID** is "21920". "**Attribute Number**" and "**Attribute Value**" can then be designed to provide additional control over RADIUS.

Attribute Name	Attribute Number	Attribute Value
HSG-Byte-Amount	10	To be defined by administrator for different user groups
HSG-MaxByteIn	11	To be defined by administrator for different user groups
HSG-MaxByteOut	12	To be defined by administrator for different user groups
HSG-Byte-Amount-4GB	20	To be defined by administrator for different user groups
HSG-MaxByteIn-4GB	21	To be defined by administrator for different user groups
HSG-MaxByteOut-4GB	22	To be defined by administrator for different user groups

If the amount of traffic is larger than 4 GB, the attributes of "XXXX-4GB" will be used. For example, if the amount is 5 GB, the following settings should be set: "HSG-Byte-Amount = 1048576" and "HSG-Byte-Amount-4GB = 1".

On the other hand, when the administrator fills in all attributes, the user will be kicked out from the system if any condition is reached. For example, if the administrator sets "HSG-Byte-Amount = 1048576"; "HSG - MaxByteIn = 1048576" and "HSG- MaxByteOut = 1048576", the user will be kicked out of the system when the downlink, uplink, or total traffic exceeds the limit.

## 2. VSA configuration in RADIUS server (IAS Server)

This section will guide you through a VSA configuration in your external RADIUS server. Before getting started, please directly or remotely access your external RADIUS server's desktop from other PC.

### Step 1

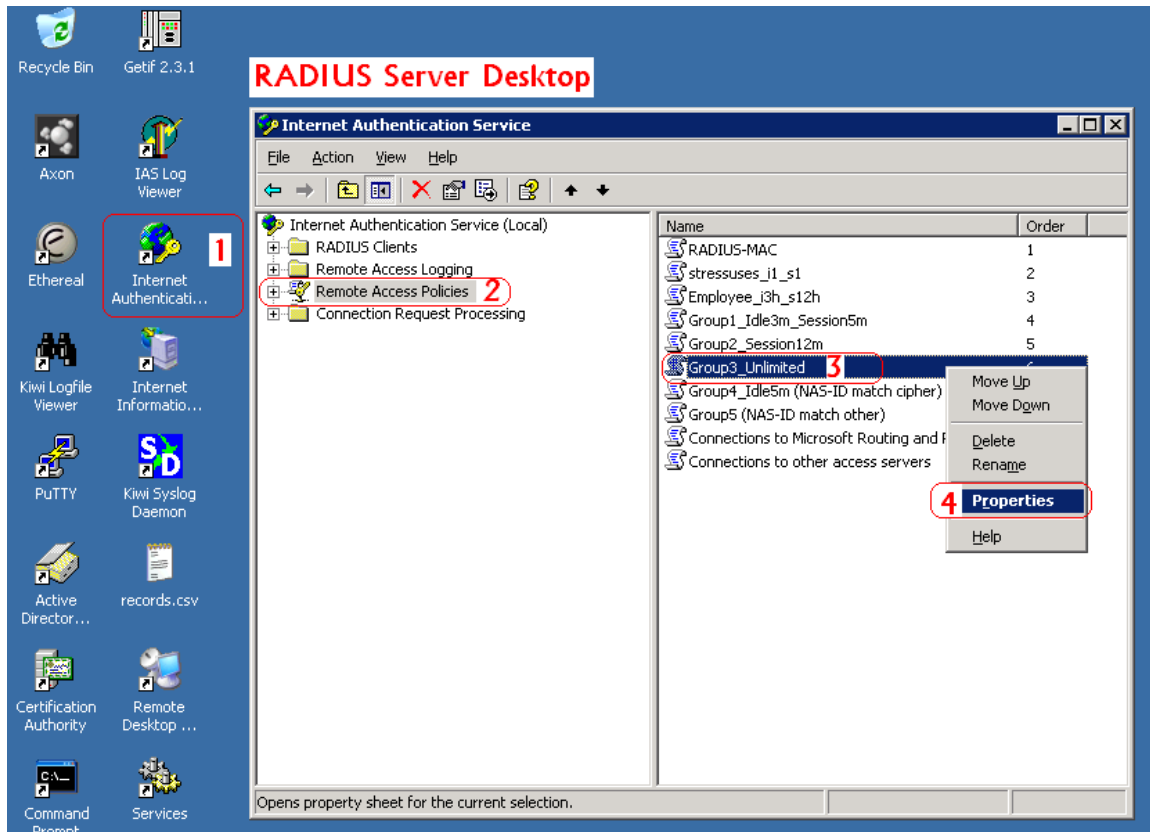
Confirm the following key elements in the RADIUS server: users, groups, and policies.

- ◆ Verify whether there are already **users** in the RADIUS Server.
- ◆ Verify whether there are already **Groups** and assigned **users** belonging to these **Groups** in the RADIUS Server.
- ◆ Verify whether there are already **Policies** and assigned **Groups** belonging to these **Policies** in the RADIUS Server.

### Step 2

Run "Internet Authentication Server" and open "Remote Access Policies"

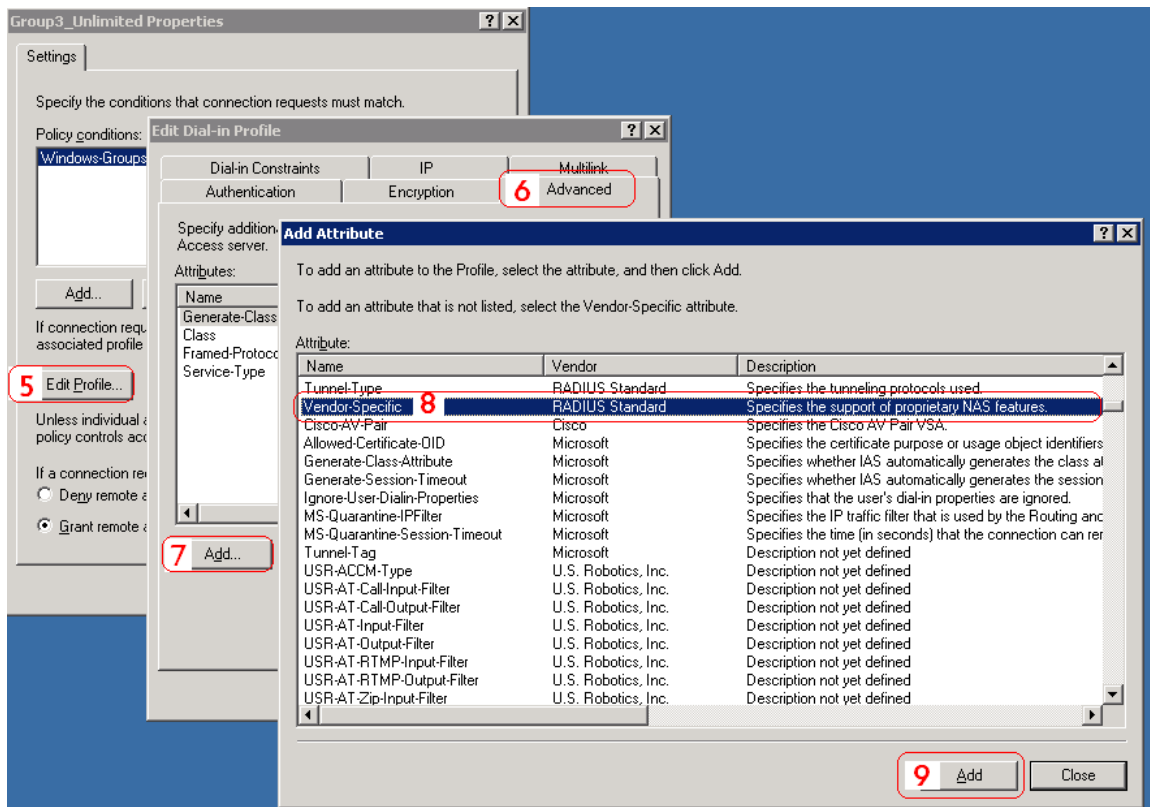
Right-click **Policy** and scroll down to the **Properties** page



### Step 3

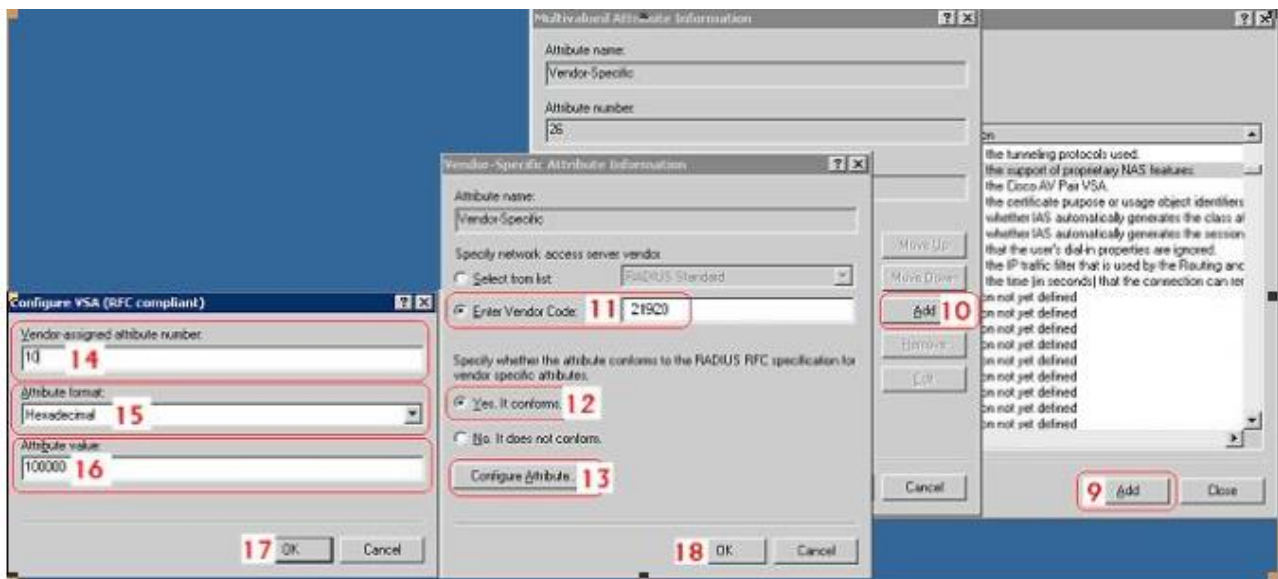
Click **Edit Profile** and select the **Advanced Tag**.

Click **Add** to add a new **Vendor-specific** attribute.



## Step 4

- Add a new attribute under **Vendor-specific**
- Set **"Vendor Code = 21920"**.
- Check **Yes** to conform to the RADIUS RFC.
- Click **Configure Attribute** to proceed.
- Set **"Vendor-assigned attribute number = 10"**
- Select **"Attribute format = Hexadecimal"**
- Set **"Attribute Value = 1000000"**



## Step 5

- Confirm whether the **Vendor-specific Attribute** has been added successfully



### Multivalued Attribute Information

Attribute name:  
Vendor-Specific

Attribute number:  
26

Attribute format:  
OctetString

Attribute values:

Vendor	Value
Vendor code: 21920	100000

Max download + upload traffic is 1 M Bytes

Move Up

Move Down

Add

Remove

Edit

**19** OK

Cancel

### Edit Dial-in Profile

Dial-in Constraints
IP
Multilink

Authentication
Encryption
Advanced

Specify additional connection attributes to be returned to the Remote Access server.

Attributes:

Name	Vendor	Value
Generate-Class-Attribute	Microsoft	False
Class	RADIUS Standard	Class03
Framed-Protocol	RADIUS Standard	PPP
Service-Type	RADIUS Standard	Framed
Vendor-Specific	RADIUS Standard	100000

Add...

Edit...

Remove

**21** OK

Cancel

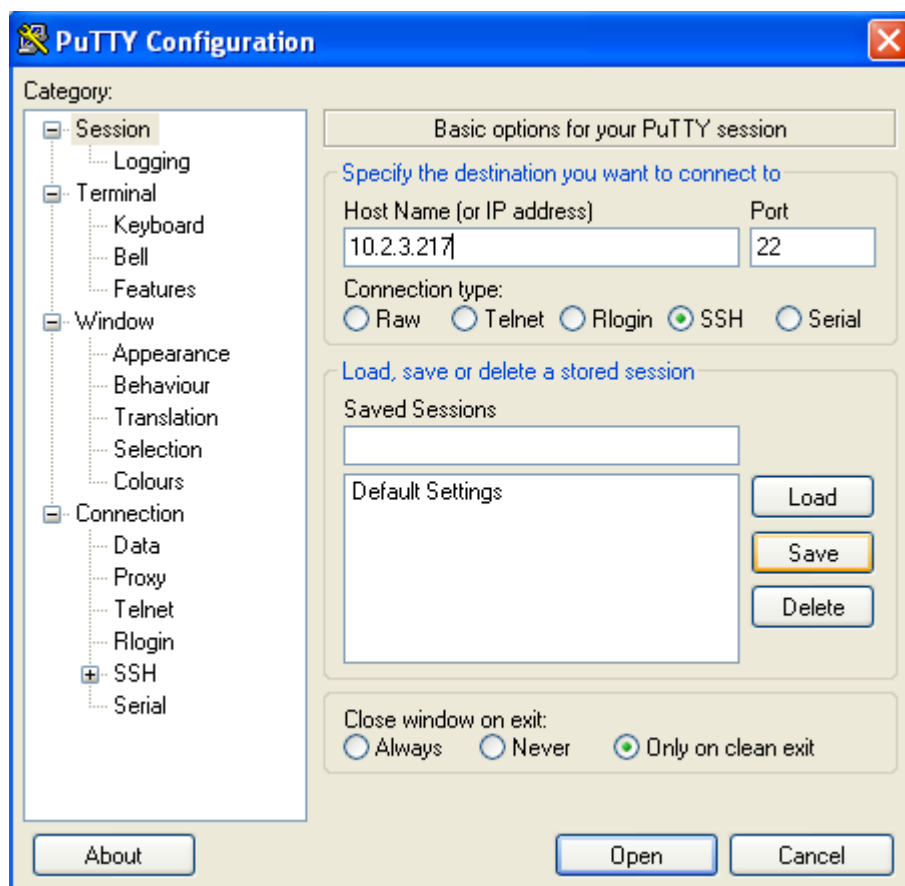
**20** Apply

## Step 6

Follow the same steps to create other **Vendor-specific Attributes** if needed.

### 3. VSA configuration in RADIUS server (FreeRADIUS)

This section will guide you through **VSA** configuration with FreeRADIUS v1.0.5 running on “Fedora”. Before getting started, open the shell of RADIUS server; for example, use *PuTTY* to access the Linux host:



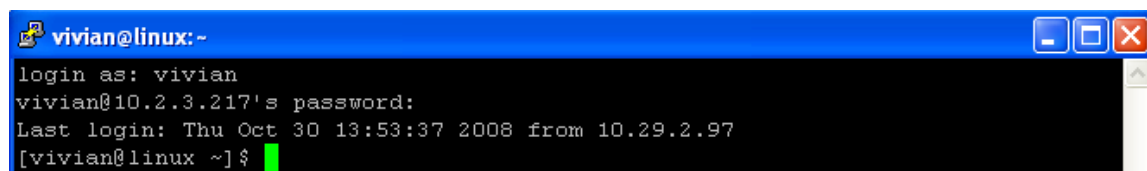
#### Step 1

Confirm the following key elements in the RADIUS server: users, groups

- ◆ Verify whether there are already **users** in the RADIUS Server.
- ◆ Verify whether there are already **Groups** and assigned **users** belonging to these **Groups** in the RADIUS Server.

#### Step 2

Log in to the Linux host of the RADIUS server.



#### Step 3

Create a file “dictionary.HSG” under the “freeradius” folder.

```
[vivian@linux ~]$ vi /usr/share/freeradius/dictionary.
```

## Step 4

Edit and save the contents of the file “dictionary.HSG” as follows:

```
VENDOR                                21920
#
#      Standard attribute
#
ATTRIBUTE      -Byte-Amount          10      interger
```

Administrator can also add other attributes as the table stated in Section 2 with the same format.

```
VENDOR                                21920
#
#      Standard attribute
#
ATTRIBUTE      -Byte-Amount          10      interger
ATTRIBUTE      -MaxByteIn            11      interger
ATTRIBUTE      -MaxByteIn            12      interger
ATTRIBUTE      -Byte-Amount-4GB      20      interger
ATTRIBUTE      -MaxByteIn-4GB        21      interger
ATTRIBUTE      -MaxByteIn-4GB        22      interger
```

## Step 5

Edit the file “dictionary” under the folder “freeradius”.

```
[vivian@linux ~]$ vi /usr/share/freeradius/dictionary
```

## Step 6

To include “dictionary.HSG” in the dictionary of RADIUS server, insert it in an incremental position as follows.

```
$INCLUDE dictionary.ascend
$INCLUDE dictionary.bay
$INCLUDE dictionary.bintec
$INCLUDE dictionary.cabletron
$INCLUDE dictionary.
$INCLUDE dictionary.cisco
#
# This is the same as the altiga dictionary.
#
#$INCLUDE dictionary.cisco.vpn3000
$INCLUDE dictionary.cisco.vpn5000
$INCLUDE dictionary.cisco.bbsm
$INCLUDE dictionary.colubris
$INCLUDE dictionary.ern
```

## Step 7

Open the “radius” database.

```
[vivian@linux ~]$ mysql -u root -p radius
Enter password:
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 98 to server version: 5.0.27

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql>
```

## Step 8

Insert **VSA** into RADIUS response. In this example, the maximum download and upload traffics in bytes for **group03 users** is 1MBytes.

```
mysql> INSERT INTO radgroupreply (GroupName,Attribute,op,Value)
VALUES ('group03', cipherium-Byte-Amount, '=', '1048576')
Query OK, 1 row affected (0.00 sec);
mysql> exit
Bye
```

## Step 9

Restart RADIUS daemon to get your settings activated.

```
[vivian@linux ~] # /etc/init.d/radiusd restart
Stopping RADIUS server: [ OK ]
Starting RADIUS server: Thu Oct 30 14:26:41 2008 : Info: Starting - reading conf
figuration files ... [ OK ]
```

## Appendix D. On-demand Account types & Billing Plan

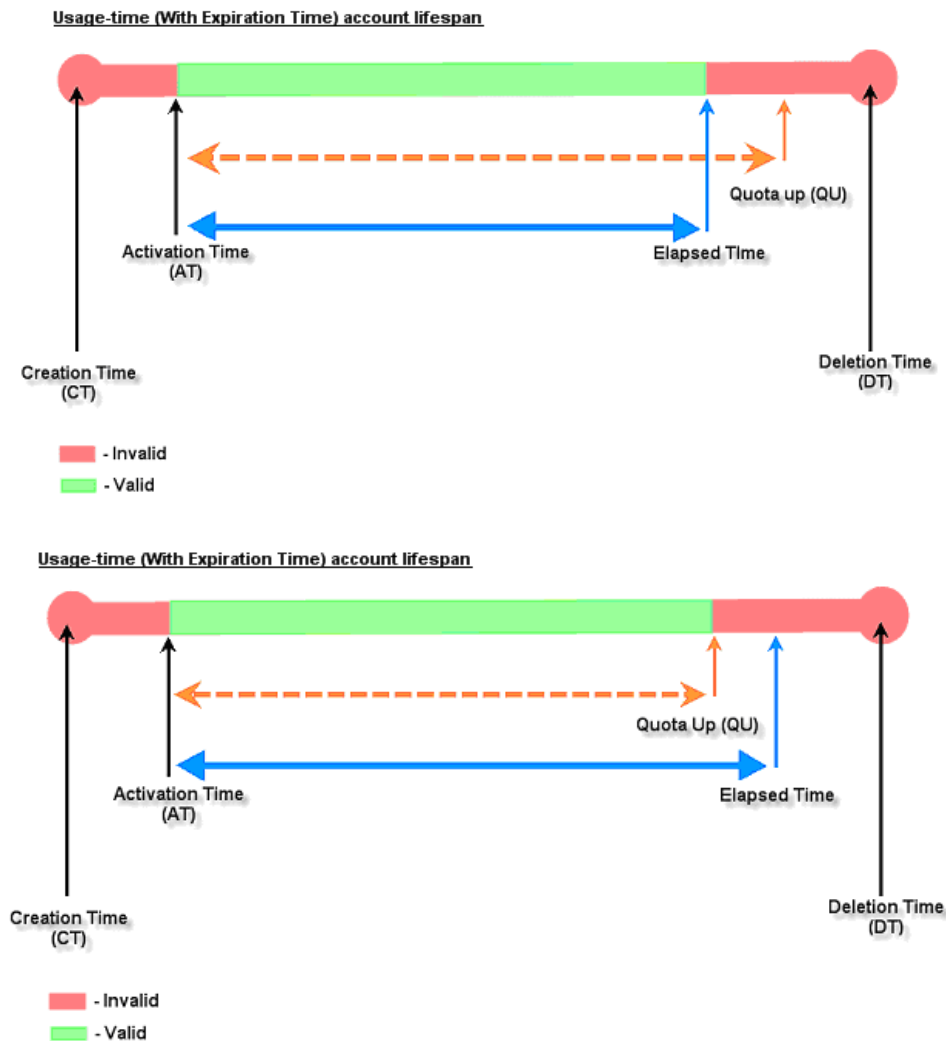
This section explains the parameters as well as the different account types provided when editing billing plans in On-demand authentication.

- **Usage-time with Expiration Time:** Users can access internet as long as account is valid with remaining quota (usable time). Users need to activate the purchased account within a given time period by logging in. It is Ideal for short-term usage, namely in coffee shops, at airport terminals, etc. This billing type only deducts quota when internet is being used. However, the count down to Expiration Time is continuous regardless of logging in or out. Account would expire when the **Valid Period** is used up or the quota depleted.
  - **Quota** is the total period of time (xx days yy hrs zz mins), during which On-demand users are allowed to access the network. The total maximum quota is "364Days 23hrs 59mins 59secs" even after redeeming.
  - **Account Activation** is carried out when the user logs in for the first time. Failing to do so in the period set in Account Activation will result in account expiration.
  - **Valid Period** is the valid period of usage time. After this time period, even if there is remaining quota, the account will still expire.
  - **Price** is the unit price of this plan.
  - **Group** will be the applied Group to users created from this plan.
  - **Reference** field allows administrator to input additional information.

Editing Billing Plan	
Plan	2
Account Type	Usage-time ▾
Expiration Time	<input checked="" type="radio"/> With Expiration Time <input type="radio"/> No Expiration Time
Quota	1 day(s) 2 hr(s) 3 min(s) <small>*( Range of day(s) : 0 ~ 364; Range of hour(s) : 0 ~ 23; Range of min(s) : 0 ~ 59; they cannot all be zero )</small>
Account Activation	First time login must be done within 4 day(s) 5 hour(s) <small>*( Range of hour(s) : 0 ~ 23; they cannot both be zero )</small>
Valid Period	After activation, account will be expired in 6 day(s) <small>*( Must be larger than 0 )</small>
Price	7 (\$) <small>*( Range : 0 ~ 100000, including two digits after decimal point; e.g. 1.99 )</small>
Group	Group 1 ▾
Reference	

TIP:

If the Account Type is "Usage Time", Customer can access internet as long as the account is valid with remaining quota (connection time) and within the valid period. Customer also needs to activate the issued account within a given time period by logging in for the first time.

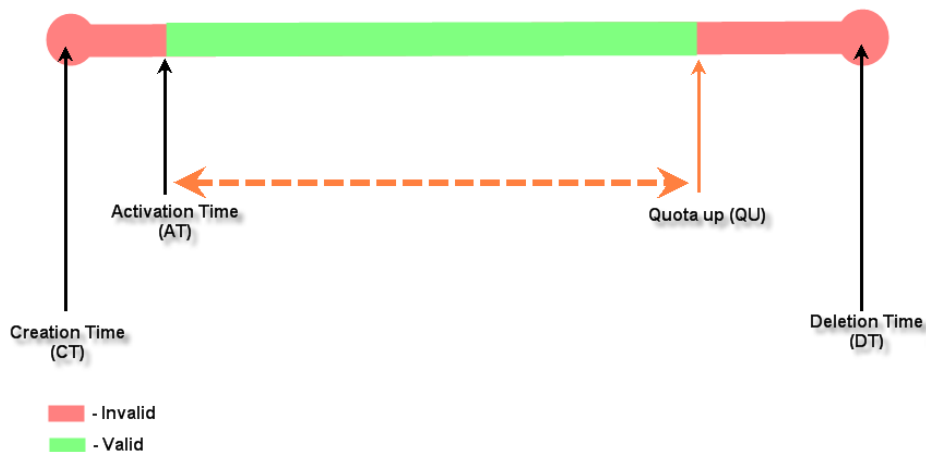


- **Usage-time with No Expiration Time:** Users can access internet as long as the account has remaining quota (usable time). Users need to activate the purchased account within the given time by logging in. It is ideal for short-term usage. For example, in coffee shops, at airport terminals etc. This billing type only deducts quota while the user is using internet. Account will expire only when the quota is depleted.
  - **Quota** is the total period of time (xx days yy hrs zz mins), during which On-demand users are allowed to access the network. The total maximum quota is “364Days 23hrs 59mins 59secs” even after redeeming.
  - **Account Activation** is carried out when the user logs in for the first time. Failing to do so in the period set in Account Activation will result in account expiration.
  - **Price** is the unit price of this plan.
  - **Group** will be the applied Group to users created from this plan.
  - **Reference** field allows administrator to input additional information.

Editing Billing Plan	
Plan	3
Account Type	Usage-time ▾
Expiration Time	<input type="radio"/> With Expiration Time <input checked="" type="radio"/> No Expiration Time
Quota	<div>2 day(s) 3 hr(s) 4 min(s)</div> <div>*( Range of day(s) : 0 ~ 364; Range of hour(s) : 0 ~ 23; Range of min(s) : 0 ~ 59; they cannot all be zero )</div>
Account Activation	<div>First time login must be done within 5 day(s) 6 hour(s)</div> <div>*( Range of hour(s) : 0 ~ 23; they cannot both be zero )</div>
Price	<div>7 ( \$ )</div> <div>*( Range : 0 ~ 100000, including two digits after decimal point; e.g. 1.99 )</div>
Group	Group 1 ▾
Reference	<input type="text"/>

TIP:  
If the Account Type is "Usage Time", Customer can access internet as long as the account is valid with remaining quota (connection time) and within the valid period.  
Customer also needs to activate the issued account within a given time period by logging in for the first time.

Usage-time (No Expiration) account lifespan





- **Hotel Cut-off-time:** **Hotel Cut-off-time** is the clock time (normally check-out time) at which the on-demand account is cut off (made expired) by the system on the following day or many days later. On the account creation UI of this plan, operator can enter a Unit value which is the number of days to Cut-off-time according to customers' stay time. For example: Unit = 2 days, Cut-off Time = 13:00 then account will expire on 13:00 two days later. **Grace Period** is an additional, short period of time after the account is cut off that allows user to continue to use the on-demand account to access the Internet without paying additional fee. **Max User** is to define the maximum number of users allowed for accounts created with this billing plan. **Unit Price** is the daily price of this billing plan. It is mainly used in hostel (hotel?) venues to provide internet service according to guests' stay time. **Group** will be the applied Group to users created from this plan. **Reference** field allows administrator to input additional information.

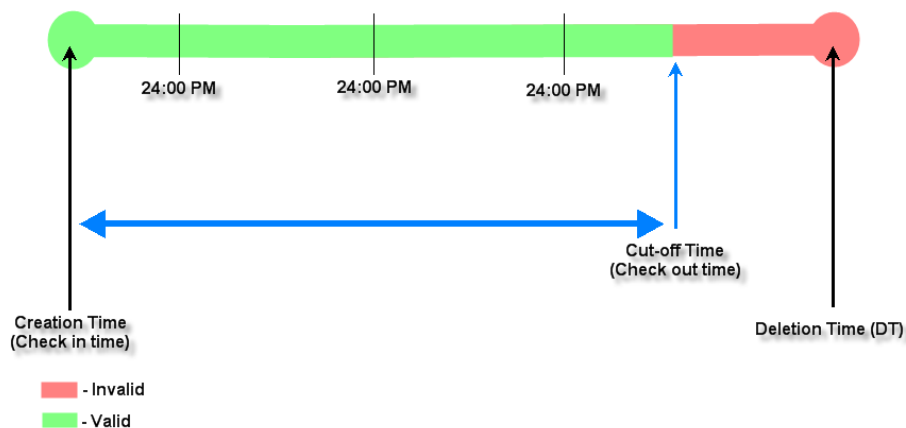
Editing Billing Plan	
Plan	2
Account Type	Hotel Cut-off-time ▼
Hotel Cut-off Time	12 : 12 *( HH:MM; range : 00:00 ~ 23:59 )
Grace Period	Account remains usable for 0.5 ▼ hour(s) after cut-off.
Max User	999 user(s)
Unit Price	1 per day *( Range : 0 ~ 100000, including two digits after decimal point; e.g. 1.99 )
Group	Group 1 ▼
Reference	

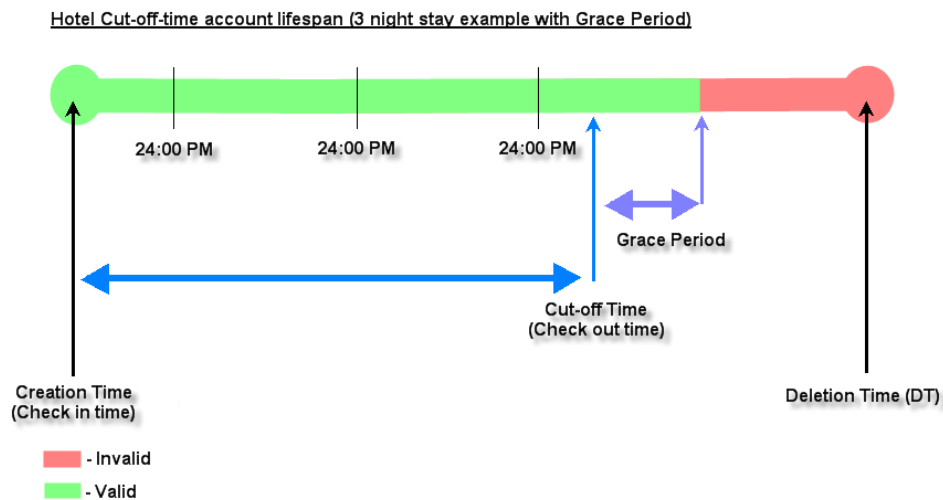
**TIP:**  
The "Hotel Cut-off-time" Account Type is designed for hotel applications and conforms to check-in/out scenario. For cut-off applications within one day (for example, the account expires upon bookstore's closing hour -11PM) please select "Duration Time".  
One-day-stay in Hotel terms is counted from a customer's check-in time to the check-out time on the following day. When a tenant checks in for one or multiple days, the operator can generate an account ticket based on the number of the over-night stay. The account will be cut-off on the specified cut-off-time (normally the hotel's check-out-time) after the number of nights specified. Since guests may hang around in the lobby for a short while after checking out, the hotel may want to specify a "Grace period" for their tenants.

Apply

Cancel

Hotel Cut-off-time account lifespan (3 night stay example)





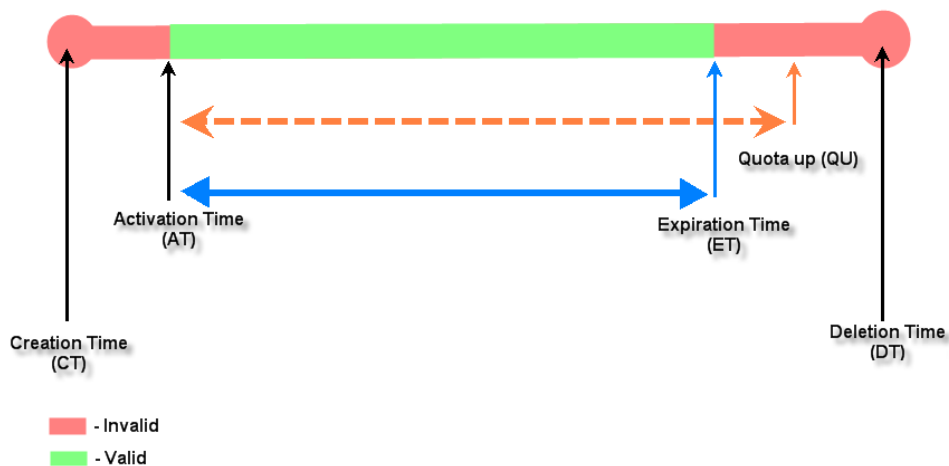
- **Volume:** Users can access internet as long as his/her account has remaining traffic volume quota. The account will expire when *Valid Period* has been used up or the quota is depleted. This type is ideal for small quantity of applications such as sending/receiving email, transferring a file, etc. Count down of Valid Period is continuous regardless of logging in or out.
  - **Quota** is the total Mbytes (1~2000) On-demand users are allowed to use to access the network.
  - **Account Activation** is carried out when the user logs in for the first time. Failing to do so in the period set in Account Activation will result in account expiration
  - **Valid Period** is the valid period of usage time. After this time period, the account will expire even if there is remaining quota.
  - **Price** is the unit price of this plan.
  - **Group** will be the applied Group to users created from this plan.
  - **Reference** field allows administrator to input additional information.

Editing Billing Plan	
Plan	1
Account Type	Volume
Quota	500 Mbyte(s) <small>*( Range : 1 ~ 1000000 )</small>
Account Activation	First time login must be done within 1 day(s) 1 hour(s) <small>*( Range of hour(s) : 0 ~ 23; they cannot both be zero )</small>
Valid Period	After activation, account will be expired in 1 day(s) <small>*( Must be larger than 0 )</small>
Price	1 <small>*( Range : 0 ~ 100000, including two digits after decimal point; e.g. 1.99 )</small>
Group	Group 4
Reference	

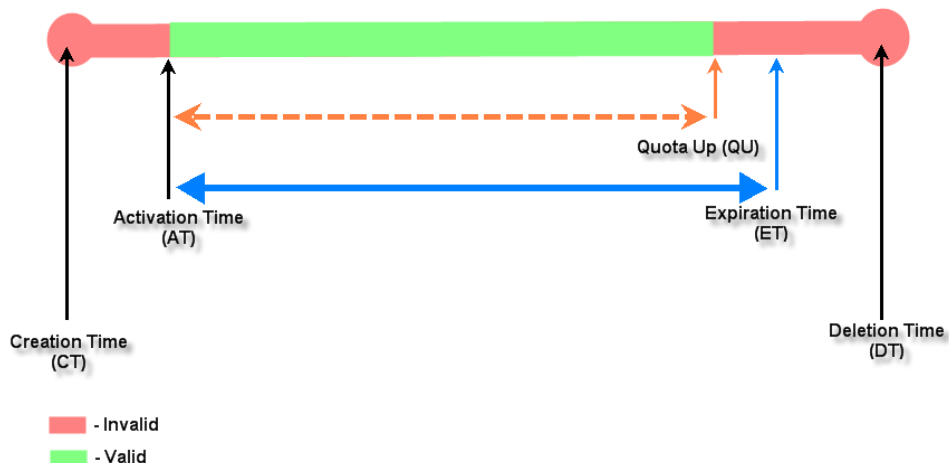
TIP:  
If the Account Type is "Volume", Customer can access internet as long as the account is valid (within the valid period) with remaining quota (traffic volume).  
Customer also needs to activate the issued account within a given time period by logging in for the first time.

Apply Cancel

#### Volume account lifespan



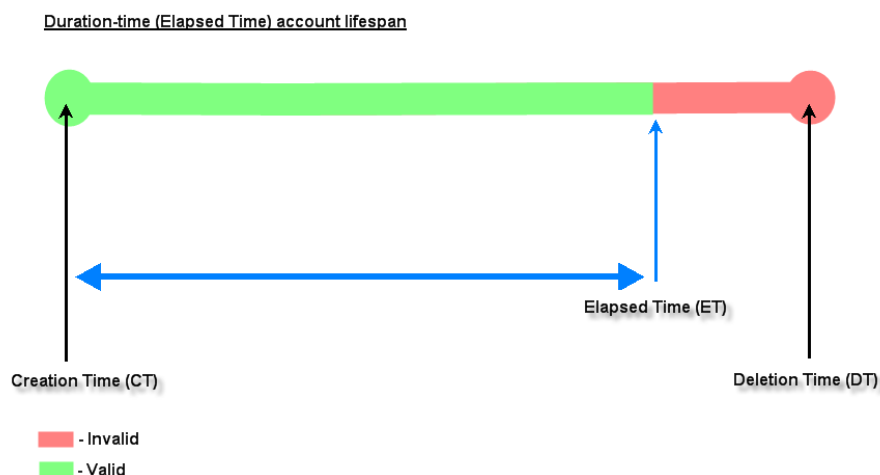
#### Volume account lifespan



- **Duration-time with Elapsed Time:** Account is activated upon the account creation time. Count down begins immediately after account creation and is continuous regardless of logging in or out. The account will expire once the *Elapsed Time* is reached. This billing type is ideal for providing internet service immediately after account creation throughout a specific period of time.
  - **Begin Time** is the time that the account will be activated for use. It is set to account creation time.
  - **First time login** is set to require users to log in within a specified period of time.
  - **Elapsed Time** is the time interval for which the account is valid for internet access (xx hrs yy mins).
  - **Max User** is the defined number of concurrent users allowed to log in with this billing plan.
  - **Price** is the unit price of this plan.
  - **Group** will be the applied Group to users created from this plan.
  - **Reference** field allows administrator to input additional information.

Editing Billing Plan	
Plan	1
Account Type	Duration-time ▼
Counting Method	<input checked="" type="radio"/> Elapsed Time <input type="radio"/> Begin-and-end Time <input type="radio"/> Cut-off Time
Begin Time	<input checked="" type="radio"/> Upon Account Creation <input type="radio"/> First time login must be done within <input type="text" value="2"/> day(s) <input type="text" value="0"/> hour(s) <small>*( Range of hour(s) : 0 ~ 23; they cannot both be zero )</small>
Elapsed Time	<input type="text"/> day(s) <input type="text"/> hr(s) <input type="text"/> min(s) <small>*( Range of day(s) : 0 ~ 364; Range of hour(s) : 0 ~ 23; Range of min(s) : 0 ~ 59; they cannot all be zero )</small>
Max User	<input type="text" value="1"/> user(s)
Price	<input type="text" value="2"/> <small>*( Range : 0 ~ 100000, including two digits after decimal point; e.g. 1.99 )</small>
Group	Group 1 ▼
Reference	<input type="text"/>

TIP:  
When the Account Type is Duration-time, three Counting Methods may be used to decide when the account expires.  
 1. "Elapsed Time" specifies the time duration from account creation for which the account is valid.  
 2. "Cut-off Time" specifies the next cut-off time point for which the account becomes invalid.  
 3. "Begin and End Time" specifies that the account is valid between the two time points.



**Duration-time with Cut-off Time:** **Cut-off Time** is the clock time at which the on-demand account is cut off (made expired) by the system on that day. For example if a shopping mall closes at 23:00, operators selling on-demand tickets can use this plan to create a ticket set to be Cut-off on 23:00. If an account of this kind is created after the Cut-off Time, the account will automatically expire.

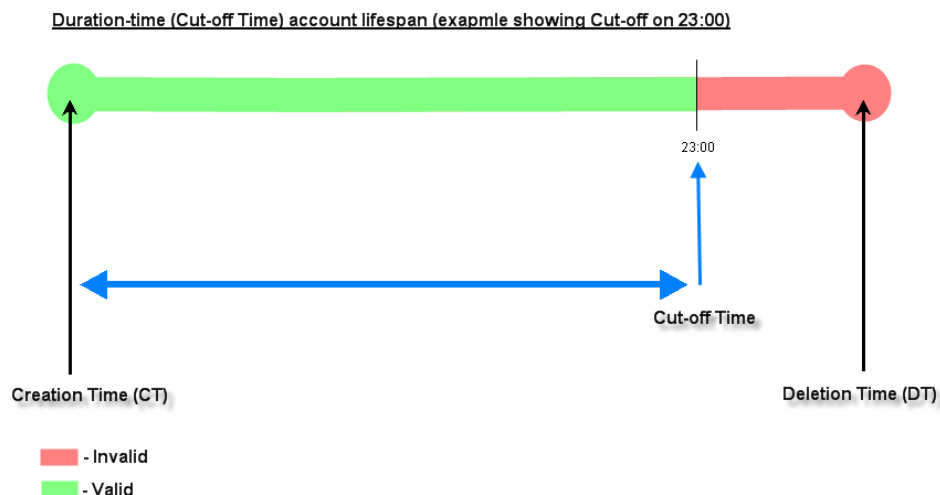
- **Begin Time** is the time that the account will be activated for use. It is set to account creation time.
- **Cut-off Time** is the clock time when the account will expire.
- **Max User** is the defined number of concurrent users allowed to log in with this billing plan.
- **Price** is the unit price of this plan.
- **Group** will be the applied Group to users created from this plan.
- **Reference** field allows administrator to input additional information.

Editing Billing Plan	
Plan	1
Account Type	Duration-time ▼
Counting Method	<input type="radio"/> Elapsed Time <input type="radio"/> Begin-and-end Time <input checked="" type="radio"/> Cut-off Time
Begin Time	Upon Account Creation
Cut-off Time	<div> <input type="text"/> : <input type="text"/> </div> <small>*( HH:MM; range : 00:00 ~ 23:59 )</small>
Max User	<input type="text"/> user(s)
Price	<input type="text"/> <small>*( Range : 0 ~ 100000, including two digits after decimal point; e.g. 1.99 )</small>
Group	Group 1 ▼
Reference	<input type="text"/>

**TIP:**

When the Account Type is Duration-time, three Counting Methods may be used to decide when the account expires.

1. "Elapsed Time" specifies the time duration from account creation for which the account is valid.
2. "Cut-off Time" specifies the next cut-off time point for which the account becomes invalid.
3. "Begin and End Time" specifies that the account is valid between the two time points.



- **Duration-time with Begin-and End Time:** This plan defines explicitly the *Begin Time* and *End Time* of the account. Count down begins immediately after account activation and expires when the *End Time* is reached. This plan is ideal for providing internet service throughout a specific period of time; for example during exhibition events or large conventions such as Computex where each registered participant will get an internet account valid from 8:00 AM Jun 1 to 5:00 PM Jun 5. Account can be created in batch similar to creating coupons.
  - **Begin Time** is the time that the account will be activated for use, defined explicitly by the operator.
  - **End Time** is the time that the account will expire, defined explicitly by the operator.
  - **Max User** is the defined number of concurrent users allowed to log in with this billing plan.
  - **Price** is the unit price of this plan.
  - **Group** will be the applied Group to users created from this plan.
  - **Reference** field allows administrator to input additional information.

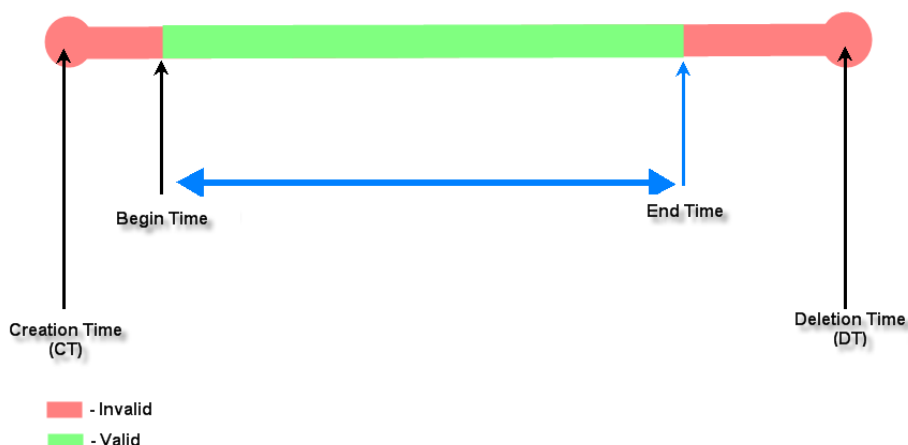
Editing Billing Plan	
Plan	1
Account Type	Duration-time
Counting Method	<input type="radio"/> Elapsed Time <input checked="" type="radio"/> Begin-and-end Time <input type="radio"/> Cut-off Time
Begin Time	-- : -- , -- -- --
End Time	-- : -- , -- -- --
Max User	1 user(s)
Price	2 <small>*( Range : 0 ~ 100000, including two digits after decimal point; e.g. 1.99 )</small>
Group	Group 1
Reference	

**TIP:**  
When the Account Type is Duration-time, three Counting Methods may be used to decide when the account expires.

1. "Elapsed Time" specifies the time duration from account creation for which the account is valid.
2. "Cut-off Time" specifies the next cut-off time point for which the account becomes invalid.
3. "Begin and End Time" specifies that the account is valid between the two time points.

Apply Cancel

Duration-time (Begin-and-end Time) account lifespan



## Appendix E. External Payment Gateways

This section is to show independent Hotspot owners how to configure related settings in order to accept payments via Authorize.net, PayPal, SecurePay or WorldPay, making the Hotspot an e-commerce environment for end users to pay for and obtain Internet access with credit cards.

### 1. Payments via Authorize.Net

To configure Payments via Authorize.Net, go to:

**Users >> Authentication >> On-demand User >> External Payment Gateway >> Authorize.Net.**

Before setting up “Authorize.Net”, it is required that the merchant owners have a valid Authorize.Net account.

#### ➤ Authorize.Net Payment Page Configuration

External Payment Gateway	
<input checked="" type="radio"/> Authorize.Net	<input type="radio"/> PayPal <input type="radio"/> SecurePay <input type="radio"/> WorldPay <input type="radio"/> Disable

Authorize.Net Payment Page Configuration	
<b>Merchant Login ID</b>	<input type="text"/> *
<b>Merchant Transaction Key</b>	<input type="text"/> *
<b>Payment Gateway URL</b>	<input type="text" value="https://secure.authorize.net/gateway/transact.dll"/> *
<b>Verify SSL Certificate</b>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable Default ▾
<b>Test Mode</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable <input type="button" value="Try Test"/> *
<b>MD5 Hash</b>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

**Merchant ID:** This is the “Login ID” that comes with the Authorize.Net account

**Merchant Transaction Key:** The merchant transaction key is similar to a password and is used by Authorize.Net to authenticate transactions.

**Payment Gateway URL:** This is the default website address to post all transaction data.

**Verify SSL Certificate:** This is to help protect the system from accessing a website other than Authorize.Net.

**Test Mode:** In this mode, merchants can post **test** transactions **for free** to check if the payment function works properly.

**MD5 Hash:** If transaction responses need to be encrypted by the Payment Gateway, enter and confirm a MD5 Hash Value and select a reactive mode. The MD5 Hash security feature enables merchants to verify that the results of a transaction or transaction response received by their server are actually sent from the Authorize.Net.

- **Service Disclaimer Content/ Choose Billing Plan for Authorize.Net Payment Page/Client's Purchasing Record**

Service Disclaimer Content				
We may collect and store the following personal information: email address, physical contact information, credit card numbers and transactional information based on your activities on the Internet service provided by us.				

Choose Billing Plan for Authorize.Net Payment Page				
Plan	Enable/Disable		Quota	Price
1	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	5 hr(s) 5 min(s)	0
2	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
3	<input checked="" type="radio"/> Enable	<input checked="" type="radio"/> Disable	10 hr(s) 6 min(s)	9000
4	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
5	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	Until 18:30	88
6	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
7	<input checked="" type="radio"/> Enable	<input checked="" type="radio"/> Disable	20.73 Mbyte(s)	0.59
8	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
9	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
10	<input checked="" type="radio"/> Enable	<input checked="" type="radio"/> Disable	600 Mbyte(s)	6.99

Client's Purchasing Record	
Starting Invoice Number	Hotspot - 00000000 * <input type="checkbox"/> Change the Number
Description (Item Name)	Internet Access *
E-mail Header	Enjoy Online! *

### Service Disclaimer Content

View service agreements and fees for the standard payment gateway services here as well as adding a new or editing service disclaimer.

### Choose Billing Plan for Authorize.Net Payment Page

These 10 plans are the plans configured in the **Billing Plans** page, and all previously enabled plans can be further enabled or disabled here, as needed.

### Client's Purchasing Record

- **Starting Invoice Number:** An invoice number may be provided as additional information for a transaction. The number will be incremented automatically for each following transaction. Click the "Change the Number" checkbox to change it.
- **Description (Item Name):** This is the item information to describe the product (for example, Internet Access).
- **Email Header:** Enter the information that should appear in the header of the invoice.



➤ **Authorize.Net Payment Page Fields Configuration/ Authorize.Net Payment Page Remark Content**

Authorize.Net Payment Page Fields Configuration		
Item	Displayed Text	Required
<input checked="" type="checkbox"/> Credit Card Number	Credit Card Number *	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Credit Card Expiration Date	Credit Card Expiration Date *	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> First Name	First Name *	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Last Name	Last Name *	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Card Type	Card Type * <input checked="" type="checkbox"/> Visa <input checked="" type="checkbox"/> American Express <input checked="" type="checkbox"/> Master Card <input checked="" type="checkbox"/> Discover	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Card Code	Card Code *	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> E-mail	E-mail *	<input type="checkbox"/>
<input type="checkbox"/> Customer ID	Room Number *	<input type="checkbox"/>
<input checked="" type="checkbox"/> Company	Company *	<input type="checkbox"/>
<input checked="" type="checkbox"/> Address	Address *	<input type="checkbox"/>
<input checked="" type="checkbox"/> City	City *	<input type="checkbox"/>
<input checked="" type="checkbox"/> State	State *	<input type="checkbox"/>
<input checked="" type="checkbox"/> Zip	Zip *	<input type="checkbox"/>
<input checked="" type="checkbox"/> Country	Country *	<input type="checkbox"/>
<input checked="" type="checkbox"/> Phone	Phone *	<input type="checkbox"/>
<input checked="" type="checkbox"/> Fax	Fax *	<input type="checkbox"/>

\*Displayed text fields must be filled.

Authorize.Net Payment Page Remark Content	
You must fill in the correct credit card number and expiration date. Card code is the last 3 digits of the security code located on the back of your credit card. If	

### Authorize.Net Payment Page Fields Configuration

- **Item:** Check the box to show this item on the customer's payment interface.
- **Displayed Text:** Enter what needs to be shown for this field.
- **Required:** Check the box to indicate this item as a required field.
- **Credit Card Number:** Credit card number of the customer. The Payment Gateway will only accept card numbers that correspond to the listed card types.
- **Credit Card Expiration Date:** Expiration date of the credit card. This should be entered in the format of MYY. For example, the expiration date of July September 2009 should be entered as 0709.
- **Card Type:** This value indicates the level of match between the Card Code entered in a transaction and the value that is on the file with a customer's credit card company. A code and narrative description are provided to indicate the results returned by the processor.
- **Card Code:** The three- or four-digit code assigned to a customer's credit card number (at the end of the credit card number found either on the front or back of the card).
- **E-mail:** An email address may be provided along with the billing information for a transaction. This is the customer's email address and should contain an @ symbol.

- **Customer ID:** This is an internal identifier for customers that may be associated with the billing information for a transaction. This information field may contain any format.
- **First Name:** The first name of a customer associated with the billing or shipping address of a transaction. In the case when John Doe places an order, enter John in the First Name field indicating this customer's name.
- **Last Name:** The last name of a customer associated with the billing or shipping address of a transaction. In the case when John Doe places an order, enter Doe in the Last Name field indicating this customer's name.
- **Company:** The name of the company associated with the billing or shipping information entered on a given transaction.
- **Address:** The address entered either in the billing or shipping information of a given transaction.
- **City:** The city associated with either the billing address or shipping address of a transaction.
- **State:** A state associated with both the billing and shipping address of a transaction. This may be entered as either a two-character abbreviation or the full text name of the state.
- **Zip:** The ZIP code represents a five or nine digit postal code associated with the billing or shipping address of a transaction. This may be entered as five digits, nine digits, or five digits and four digits.
- **Country:** The country associated with both the billing and shipping address of a transaction. This may be entered as either an abbreviation or full name.
- **Phone:** A phone number associated with both a billing and shipping address of a transaction. Phone number information may be entered as all number or it may include parentheses or dashes to separate the area code and number.
- **Fax:** A fax number may be associated with the billing information of a transaction. This number may be entered as all number or contain parentheses and dashes to separate the area code and number.

**Authorize.Net Payment Page Remark Content**

Enter additional details for the transaction such as Tax, Freight and Duty Amounts, Tax Exempt status, and a Purchase Order Number, if applicable.

## 2. Payments via PayPal

To configure Payments via PayPal, go to:

**User >> Authentication >> On-demand User >> External Payment Gateway >> PayPal.**

Before setting up “PayPal”, it is required that the hotspot owners have a valid PayPal “Business Account”.

After opening a PayPal Business Account, the hotspot owners should find the “**Identity Token**” of this PayPal account to continue with “PayPal Payment Page Configuration”.

### ➤ External Payment Gateway / PayPal Payment Page Configuration

PayPal Payment Page Configuration	
Business Account	<input type="text"/> *
Payment Gateway URL	<input type="text" value="https://www.paypal.com/cgi-bin/webscr"/> *
Identity Token	<input type="text"/> *
Instant Payment Notification (IPN)	<input checked="" type="radio"/> Enable <input type="radio"/> Disable <input checked="" type="checkbox"/> Behind NAT External Gateway IP: <input type="text"/> * External Gateway Port: <input type="text"/> *
Verify SSL Certificate	<input checked="" type="radio"/> Enable <input type="radio"/> Disable Default ▼
Currency	USD (U.S. Dollar) ▼ *

- **Business Account:** The “Login ID” (an email address) associated with the PayPal Business Account.
- **Payment Gateway URL:** The default website address to post all transaction data.
- **Identity Token:** This is the key used by PayPal to validate all the transactions.
- **IPN behind NAT:** IPN is the acronym of Instant Payment Notification which is a mechanism adopted by PayPal for identifying the outcome of a transaction. When this option is enabled, an upstream NAT server may be designated for accepting the IPN message from PayPal. This is a mandatory configuration item if the WAN IP of your gateway is not a public IP address, corresponding NAT translation configurations are necessary.
- **Verify SSL Certificate:** This is to help protect the system from accessing a website other than PayPal
- **Currency:** The currency to be used for payment transaction.

➤ **Service Disclaimer Content / Choose Billing Plan for PayPal Payment Page**

Service Disclaimer Content	
We may collect and store the following personal information: email address, physical contact information, credit card numbers and transactional information based on your activities on the Internet service provided by us. If the information you provide cannot be verified, we may	*

Choose Billing Plan for PayPal Payment Page				
Plan	Enable/Disable		Quota	Price
1	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	5 hr(s) 5 min(s)	0
2	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
3	<input checked="" type="radio"/> Enable	<input checked="" type="radio"/> Disable	10 hr(s) 6 min(s)	9000
4	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
5	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	Until 18:30	88
6	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
7	<input checked="" type="radio"/> Enable	<input checked="" type="radio"/> Disable	20.73 Mbyte(s)	0.59
8	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
9	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable		
10	<input checked="" type="radio"/> Enable	<input checked="" type="radio"/> Disable	600 Mbyte(s)	6.99

- **Service Disclaimer Content:** View the service agreement and fees for the standard payment gateway services as well as add or edit the service disclaimer content here.
- **Choose Billing Plan for PayPal Payment Page:** These 10 plans are the plans in **Billing Configuration**, and the desired plan(s) can be enabled.

➤ **Client's Purchasing Record / PayPal Payment Page Remark Content**

Client's Purchasing Record	
Starting Invoice Number	Hotspot 00000000 * <input type="checkbox"/> Change the Number
Description (Item Name)	Internet Access *
Title for Message to Seller	Special Note to Seller *

PayPal Payment Page Remark Content
( A ) Payment is accepted via PayPal. PayPal enables you to send payments securely online using PayPal account, a credit card or bank account. Clicking on "Buy Now" button,

**Client's Purchasing Record:**

- **Starting Invoice Number:** An invoice number may be provided as additional information for the transaction. This is a reference field that may contain any sort of information.
- **Description:** Enter the product/service description (e.g. wireless access service).
- **Title for Message to Seller:** Enter the information that will appear in the header of the PayPal payment page.

**PayPal Payment Page Remark Content:** The message content will be displayed as a special notice to end customers in the page of "Rate Plan". For example, it can describe caution for making a payment via PayPal.

### 3. Payments via SecurePay

To configure Payments via SecurePay, go to: **Users >> Authentication >> On-demand User>> External Payment Gateway >> SecurePay.**

Before setting up "SecurePay", it is required that the hotspot owners have a valid SecurePay "Merchant Account" from its official website.

External Payment Gateway	
<input type="radio"/> Authorize.Net	<input type="radio"/> PayPal <input checked="" type="radio"/> SecurePay <input type="radio"/> WorldPay <input type="radio"/> Disable

SecurePay Payment Page Configuration	
Merchant ID	<input type="text"/> *
Merchant Password	<input type="text"/> *
Payment Gateway URL	<input type="text" value="https://www.securepay.com.au/xmlapi/payment"/> *
Verify SSL Certificate	<input checked="" type="radio"/> Enable <input type="radio"/> Disable Default ▾
Currency	AUD (Australian Dollar) ▾ *

Service Disclaimer Content	
<div> We may collect and store the following personal information:  physical contact information, credit card numbers and transactional information based on your activities on the Internet service provided by us. </div>	

Choose Billing Plan for SecurePay Payment Page			
Plan	Enable/Disable	Quota	Price
1	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
2	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
3	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
4	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
5	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
6	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
7	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
8	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
9	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		
10	<input type="radio"/> Enable <input checked="" type="radio"/> Disable		

SecurePay Payment Page Remark Content	
<div> You must fill in the correct credit card number and expiration date. Card code is the last 3 digits of the security code located on the back of your credit card. </div>	

➤ **SecurePay Page Configuration**

**Merchant ID:** The ID that is associated with the Merchant Account.

**Merchant Password:** This is the key used by Secure Pay to validate all the transactions.

**Payment Gateway URL:** The default website address to post all transaction data.

**Verify SSL Certificate:** This is to help protect the system from accessing a website other than Secure Pay.

**Currency:** The currency to be used for the payment transactions.

➤ **Service Disclaimer Content**

View the service agreement and fees for the standard payment gateway services as well as add or edit the service disclaimer content here.

➤ **Choose Billing Plan for SecurePay Payment Page**

These 10 plans are the plans in **Billing Configuration**, and the desired plan(s) can be enabled.

➤ **SecurePay Payment Page Remark Content**

The message content will be displayed as a special notice to end customers.

## 4. Payments via World Pay

To configure Payments via WorldPay, go to:

**Users >> Authentication >> On-demand User >> External Payment Gateway >> WorldPay.**

WorldPayPaymentConfiguration	
WorldPayInstallationID	<input type="text"/> *
Payment Gateway URL	<input type="text" value="https://select.wp3.rbsworldpay.com/wcc/purchase"/> *
Currency	GBP (Pound Sterling) ▾ *

Service Disclaimer Content
<div> We may collect and store the following personal information:  physical contact information, credit card numbers and  transactional information based on your activities on the  Internet service provided by us. </div>

WorldPayBillingConfiguration				
Plan	Enable/Disable		Quota	Price
1	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	15 min(s) connection time quota with expiration	10.91
2	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	11 min(s) connection time quota	1
3	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	Valid until 12:00 the following day	5
4	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	Valid from 2010/07/14 12:00:00 till 2010/07/14 23:59:00	1
5	<input type="radio"/> Enable	<input type="radio"/> Disable		
6	<input type="radio"/> Enable	<input type="radio"/> Disable		
7	<input type="radio"/> Enable	<input type="radio"/> Disable		
8	<input type="radio"/> Enable	<input type="radio"/> Disable		
9	<input type="radio"/> Enable	<input type="radio"/> Disable		
10	<input type="radio"/> Enable	<input type="radio"/> Disable		

WorldPayNoteContent
<div> You must fill in the correct credit card number and expiration  date. Card code is the last 3 digits of the security code  located on the back of your credit card. </div>

### ➤ WorldPay Payment Configuration

**WorldPayInstallation ID:** The ID of the associated Merchant Account.

**Payment Gateway URL:** The default website of posting all transaction data.

**Currency:** The currency to be used for the payment transactions.

### ➤ Service Disclaimer Content

View the service agreement and fees for the standard payment gateway services as well as add or edit the service disclaimer content here.

### ➤ WorldPay Billing Configuration

These 10 plans are the plans in **Billing Configuration**, and the desired plan(s) can be enabled.

### ➤ WorldPay Note Content



The message content will be displayed as a special notice to end customers.

Before setting up “WorldPay”, it is required that the hotspot owners have a valid WorldPay “Merchant Account” from its official website: RBS WorldPay: Merchant Services & Payment Processing, going to ***rbsworldpay.com >> support center >> account login.***

STEP①. Log in to the Merchant Interface.

- Login url: [www.rbsworldpay.com/support/index.php?page=login&c=WW](http://www.rbsworldpay.com/support/index.php?page=login&c=WW)
- Select Business Gateway - Formerly WorldPay
- Click [Merchant Interface](#)
- Username: user2009
- Password: user2009

STEP②. Select Installations from the left hand navigation

STEP③. Choose an installation and select the Integration Setup button for the specific environment.

- Installation ID: 239xxx

223643 (Select Junior - 01server)		
232449 (Select Junior - Raja Dasgupta)		
237397 (Select Junior)		
237398 (Select Junior - Ivis Group)		
212370 (Select Junior - SAI GLOBAL)		
213296 (Select Junior)		
214432 (Select Junior)		
215568 (Select Junior - Stof)		
215910 (Select Junior)		
219440 (Select Junior - Unearthed)		
239341 (Select Junior - futurepay)		
239805 (Select Junior - Neton)		
239 — (Select Junior - — System)		
210071 (Select Junior - KNOG)		
210158 (Select Junior - Chris)		
222948 (Select Junior - innopacific)		

STEP④. Check Enable Payment Response checkbox.

STEP⑤. Enter the Payment Response URL.

- URL : <wpdisplay item=MC\_callback>

STEP⑥. Check Enable the Shopper Response.



STEP⑦. Select the Save Changes button

STEP⑧. Input Installation ID and Payment Gateway URL in gateway UI.

- Installation ID: 2009test
- URL : <https://select.wp3.rbsworldpay.com/wcc/purchase>

External Payment Gateway	
<input type="radio"/> Authorize.Net	<input type="radio"/> PayPal
<input type="radio"/> SecurePay	<input checked="" type="radio"/> WorldPay
<input type="radio"/> Disable	

WorldPay Payment Page Configuration	
Installation ID	239--- *
Payment Gateway URL	<a href="https://select.wp3.rbsworldpay.com/wcc/purchase">https://select.wp3.rbsworldpay.com/wcc/purchase</a> *
Currency	GBP (Pound Sterling) *

**Note:** The WAN IP of gateway must be a real IP.

## Appendix F. Portal Page Customization

Since every Service Zone have their own configuration profiles and acts like a virtual gateway, administrators can customize or define their own portal pages utilized by users of that Service Zone.

The customizable pages of a Service Zone are: **Disclaimer Page**, **Login Page**, **Logout Page**, **Login Success Page**, **Login Fail Page**, **Logout Success Page**, **Logout Fail Page**, **Login Success Page for On-demand User**, **Port Location Mapping Free Login Page**, **Port Location Mapping Charge Login Page**.

Custom Pages	Disclaimer Page	Configure
	Login Page	Configure
	Logout Page	Configure
	Login Success Page	Configure
	Login Failed Page	Configure
	Login Success Page for On-demand User	Configure
	Logout Success Page	Configure
	Logout Failed Page	Configure

**Main Menu >> System>Service Zone >> Service Zone Configuration**

For each customizable page, the available customization options are to use: **Default Page**, **Template Page**, **Uploaded Page**, or **External Page**.

Login Page Selection for Users - Service Zone: Default	
<input type="radio"/> Default Page	<input type="radio"/> Template Page
<input type="radio"/> Uploaded Page	<input checked="" type="radio"/> External Page

**Main Menu >> System >> Service Zone >> Service Zone Configuration >> Login Page**

**Default Page** uses a web page stored within the system, its format and content cannot be changed.

**Template Page** also uses a web page stored within the system, but the contents such as text color, background color displayed text and logo can be configured according to your preferences.

**Uploaded Page** is to upload your self defined web page into the system, and use it as portal page displayed to the user.

**External Page** uses a web page stored in an external web server as the portal page for your users. Because the pages are located on a remote server, therefore special efforts are required by these external pages to parse, process and send necessary URL parameters to and from the system.

Since External Pages needs more attention and care to setup, its html codes also need to include mechanisms for processing the necessary URL parameters in order to work properly with the Access Controller, please refer to further details regarding on external pages in the following sections.

## How External Pages Operate

Choose **External Page** if you desire to use an external web page for your custom pages. Simply enter the URL of your external webpage, click **Preview** button to check if it is reachable, take a look at how your external webpage will be displayed, then click **Apply** button.

Login Page Selection for Users - Service Zone: Default	
<input type="radio"/> Default Page	<input type="radio"/> Template Page
<input type="radio"/> Uploaded Page	<input checked="" type="radio"/> External Page

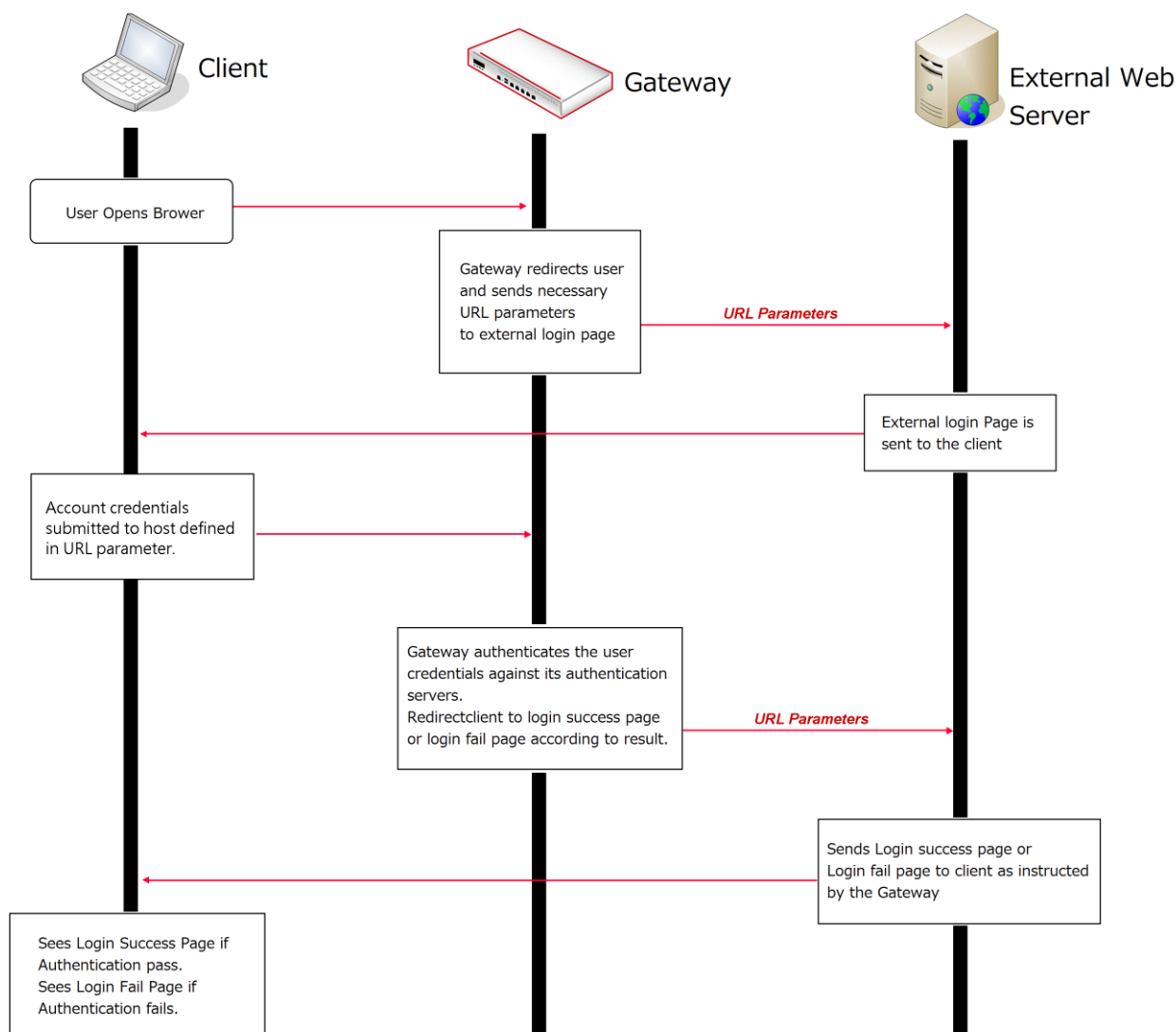
External Page Setting	
External URL	<input type="text" value="http://10.2.3.230/ExternalPage/login.html"/>
<input type="button" value="Preview"/>	

**Main Menu >> System >> Service Zone >> Service Zone Configuration >> Login Page**

When a user connects to this Service Zone, opens a web browser and attempts to access the internet, the system will point the user to the external login page configured. Gateway while forwarding users to the external web page will also send URL parameters required for the operation, for instance user authentication. Therefore, each self-defined external pages (*Login*, *Logout*, *Login Success*, *Logout Success*, etc.) requires codes to handle **URL parameters** to and from the Gateway. A simple example is illustrated below for Login Page, please refer to **External Login Page Parameters** for URL parameter relating to other pages such as *Login Success Page* ... and etc. Therefore it is important that your external pages are designed by someone with good knowledge of URL parameter utilization.

Diagram below explains how External Page operates using user login flow as illustration:



The URL parameters sent by the Gateway to the external login page are as follows:

Field	Value	Description
loginurl	String (URL encoded)	The URL which shall be submitted when user login.
remainingurl	String (URL encoded)	The URL which shall be submitted when user want to get remaining quota.
vlanid	Integer (1 ~ 4096)	VLAN ID
gwip	IP format	Gateway activated WAN IP address
client_ip	IP format	Client IP address
umac	MAC format (separated by ':')	Client MAC address
session	String	Encrypted session information, include: client IP address, MAC address, date, and return URL.

You will need to parse the required parameters in your html code. The following HTML code segment is an example of parsing *loginurl* parameter with a self define javascript function:

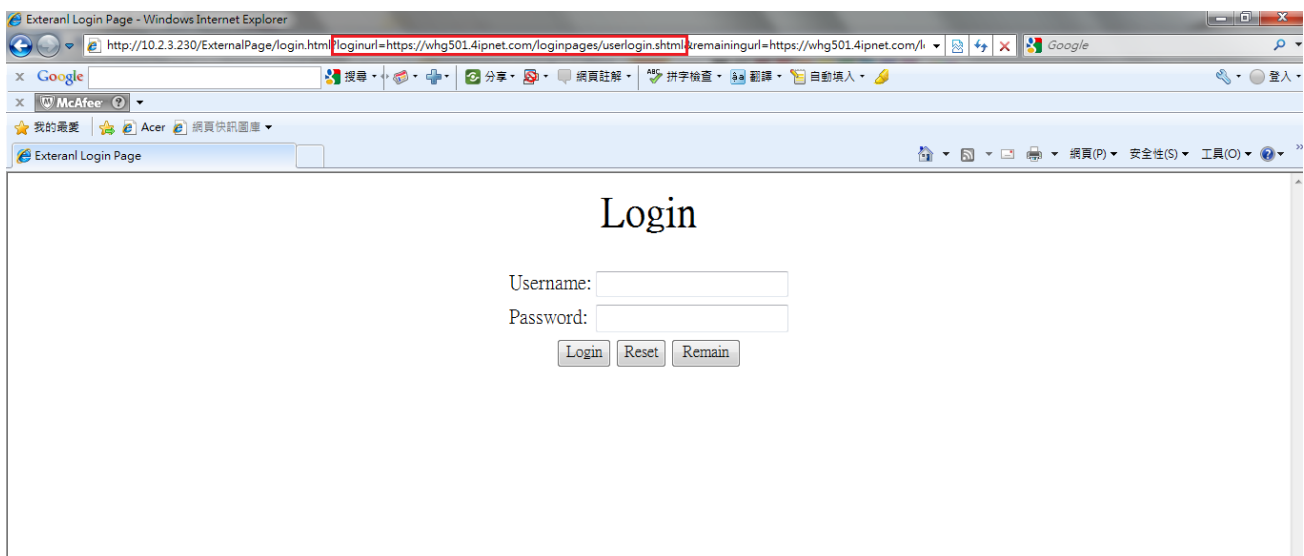
```
<FORM action="" method="post" name="form">
```

```
<script language="Javascript">
form.action = getVarFromURL(window.location.href, 'loginurl');
</script>
<INPUT type="text" name="myusername" size="25">
<INPUT type="password" name="mypassword" size="25">
<INPUT name="button_submit" type="submit" value="Enter">
<INPUT name="button_clear" type="button" value="Clear">
</FORM>
```

The following shows the corresponding self-defined javascript function used to parse the *loginurl* parameter:

```
function getVarFromURL(url, name) {
    if(name == "" || url == "") { return ""; }
    name = name.replace(/\[/|"\|"/).replace(/[/|"/|"\|]/);
    var regObj = new RegExp("[\\?&]" + name + "=(^&#)*");
    var result = regObj.exec(url);
    if(result == null) { return ""; }
    else { return decodeURIComponent(result[1]); }
}
```

An external page example that the user will see upon launching a browser, highlighted in red you can see the URL parameters sent from the system:



## URL Variables from Gateway

This section shows a list of URL variables of the external pages to be sent from the Gateway with its corresponding HTML coding.

- External Login Page:**

**Variables:**

Field	Value	Description
loginurl	String (URL encoded)	The URL which shall be submitted when user login.
remainingurl	String (URL encoded)	The URL which shall be submitted when user want to get remaining quota.
vlanid	Integer (1 ~ 4096)	VLAN ID
gwip	IP format	Gateway activated WAN IP address
client_ip	IP format	Client IP address
umac	MAC format (separated by ':')	Client MAC address
Session	String	Encrypted session information, include: client IP address, MAC address, date, and return URL.

- External Login Successful Page:**

**Variables:**

Field	Value	Description
Uid	String	User ID (postfix is included)
Utype	String (LOCAL, RADIUS, ONDEMAND, POP3, LDAP, SIP, NT Domain)	Authentication server name
Umac	MAC format (separated by ':')	Client MAC address
sessionlength	Integer (Sec.)	RADIUS user session length (Only available for RADIUS user)
byteamount	Integer (Bytes)	RADIUS user volume limit (Only available for RADIUS user)
idletimeout	Integer (Sec.)	Idle timeout
acct-interim-interval	Integer (Sec.)	RADIUS accounting interim update interval (Only available for RADIUS user)
Logouturl	String (URL encoded)	The URL which shall be submitted when user want to logout.
Change_passwd_url	String (URL encoded)	The URL which shall be submitted when user want to change

ondemand_creation_url	String (URL encoded)	password. (Only available for LOCAL user) The URL which shall be submitted when user want to create on-demand user. (Only available for LOCAL user)
Vlanid	Integer (1~4096)	VLAN ID
Gwip	IP format	Gateway activated WAN IP address
client_ip	IP format	Client IP address
Sz	Integer	Service Zone ID
Group	Integer	Group index
Policy	Integer	Policy index
max_uplink	Integer (b/s)	Maximum up-link rate
max_downlink	Integer (b/s)	Maximum down-link rate
req_uplink	Integer (b/s)	Minimum up-link rate
req_downlink	Integer (b/s)	Minimum down-link rate
next_page	String	Leads client to URL
CLASS	String	RADIUS CLASS attribute (Only available for RADIUS user)
WISPR-SESSION-TERMINATE-TIME	String, format: YYYY-MM-DDThh:mm:ssTZD	WISPr Session-Terminate-Time attribute (Only available for RADIUS user)
WISPR-SESSION-TERMINATE-END-OF-DAY	Integer (0/1)	WISPr Session-Terminate-End-Of-Day attribute, 0 or 1 to indicate termination rule. (Only available for RADIUS user)
WISPR-BILLING-CLASS-OF-SERVICE	String	WISPr Billing-Class-Of-Service attribute (Only available for RADIUS user)
WISPR-LOCATION-ID	String	WISPr Location-ID attribute (Only available for RADIUS user)
WISPR-LOCATION-NAME	String	WISPr Location-Name attribute (Only available for RADIUS user)
WISPR-BILLING-TIME	String, format: HH:MM	WISPr Billing-Time attribute (Only available for RADIUS user)
Session	String	Encrypted session information

### • External Error Page:

#### Variables:

Field	Value	Description
Msg	String, includes:	Error message

The system is busy. Please try again later.

Cannot find session related information. <BR>Please enable the Cookie in the browser setting or open a website to get a Cookie.

Invalid IP address. Please check the IP address and try again.

Invalid MAC address. Please check the MAC address and try again.

Sorry, your account is not usable, because the authentication option is currently disabled.<BR> Please contact your network administrator.

Sorry, your account is not usable, because the authentication option (associated with the postfix) is not found.<BR>Please contact your network administrator.

Sorry, you are not allowed to log in, because your account is currently on the Black List.

Sorry, you are not allowed to log in, because it is currently not the service hour for your account.

You have already logged in.

Sorry, there is a system problem



checking the information of your account (XXX).<BR>Please contact your network administrator.

Invalid username or password.<BR>Please check your username and password and try again.

Cannot identify the policy for your account.<BR>Please contact your network administrator.

User of this device (the MAC address) is not allowed to use this account.<BR>Please contact your network administrator.

Sorry, the external authentication server is currently unreachable.<BR>Please contact your network administrator.

Sorry, you are not allowed to create a remote VPN connection.

Vlanid	Integer (1~4096)	VLAN ID
Gwip	IP format	Gateway activated IP address

- External Logout Successful Page:**

**Variables:**

Field	Value	Description
Uid	String	User ID (postfix is included)
Vlanid	Integer (1~4096)	VLAN ID
Gwip	IP format	Gateway activated IP address

- External On-demand login successful page:**

**Variables:**

Field	Value	Description
-------	-------	-------------

Uid	String	User ID (postfix is included)
Utype	String (LOCAL, RADIUS, ONDEMAND, POP3, LDAP, SIP, NT Domain)	Authentication server name
Umac	MAC format (separated by ':')	Client MAC address
sessionlength	Integer (Sec.)	On-demand user's quota of time type
byteamount	Integer (byte)	On-demand user's quota of volume type
idletimeout	Integer (Sec.)	Idle timeout
Logouturl	String (URL encoded)	Logout URL
redeemurl	String (URL encoded)	Redeem URL
Vlanid	Integer (1~4096)	VLAN ID
Gwip	IP format	Gateway activated WAN IP address
client_ip	IP format	Client IP address
Sz	Integer	Service Zone ID
Group	Integer	Group index
Policy	Integer	Policy index
next_page	String	Leads client to URL
max_uplink	Integer (b/s)	Maximum up-link rate
max_downlink	Integer (b/s)	Maximum down-link rate
req_uplink	Integer (b/s)	Minimum up-link rate
req_downlink	Integer (b/s)	Minimum down-link rate
Session	String	Encrypted session information

- **External Logout Fail Page:**

**Variables:**

Field	Value	Description
Uid	String	User ID
Gwip	IP format	Gateway activated WAN IP address
Vlanid	Integer (1~4096)	VLAN ID

## URL Variables to Gateway

This section shows a list of URL variables of the external pages to be sent to the Gateway with its corresponding HTML coding. **Path:** is the URL destination; **Input:** is the parameter required to be sent back; **Output:** is the feedback from the system.

- **User Login:**

**Path:**

(LAN IP address or Internal Domain Name) /loginpages/userlogin.shtml

**Input:**

Field	Required	Value	Description
myusername	Required	String	User ID
mypassword	Required	String	User password
Session	Optional	String	Encoded string which contains some information of this session, default is taken from cookie.

**Output:**

No output, prompt login successful page.

- User Logout:**

**Path:**

(LAN IP address or Internal Domain Name) /loginpages/logoff.shtml

**Input:**

Field	Required	Value	Description
Uid	Optional	String	User ID, default is taken from cookie
Session	Optional	String	Encoded string which contains some information of this session, default is taken from cookie

**Output:**

No output, prompt logout successful page.

- Remaining quota (Credit balance):**

**Path:**

(LAN IP address or Internal Domain Name) /loginpages/reminder.shtml

**Input:**

Field	Required	Value	Description
myusername	Required	String	User name
mypassword	Required	String	Password
ret_url	Optional	String (URL encoded)	Returned URL, default is pop_reminder.shtml
Command	Optional	String	getValue: If command is set to "getValue", the return URL would be ignored, and the page would only print out the

available quota.

### Output:

If command is set to "getValue", the output is simply "value".(secs. or bytes according to user type)

If command is not set and there is no ret\_url is presented, client would be given the pop\_reminder.shtml page, which shows remaining quota in our UI style. If ret\_url is presented, client would be return to ret\_url, and gateway would add these four variables in URL.

Field	Value	Description
Msg	String, including:  Sorry, this feature is available for on-demand user only.  Sorry, this username: XXX is not found.  Sorry, this username: XXX is out of quota.  Sorry, this username: XXX is expired.  Sorry, this username: XXX is redeemed.	Error messages
Value	Integer (Sec. Or Byte)  or error no.  -1: Account not found. -2: Out of quota. -3: Expired. -4: Redeemed.	Remaining quota, if user is time type, the value is remaining seconds, if user is volume type, the value remaining bytes.
Uname	String	User name
Type	String, includes:  TIME: Time type DATA: Volume type CUTOFF: Cut-off type	On-demand user billing type

- **Change password (Local User):**

**Path:**

(LAN IP address or Internal Domain Name) /loginpages/user\_change\_password.shtml

**Input:**

Field	Required	Value	Description
Save	Required	1 (have to be 1)	
Opw	Required	String	Old password
Npw	Required	String	New password
Npwc	Required	String	Confirmed new password
ret_url	Required	String (URL encoded)	Return URL

**Output:**

Client would return to ret\_url and gateway would add result in ret\_url which indicates the result of changing password.

Field	Value	Description
Result	String, including:	Result and error messages
	Change password successfully	
	User password is incorrect	
	Invalid password format	

- Redeem (On-demand user):**

**Path:**

(LAN IP address or Internal Domain Name)/loginpages/redeemuserlogin.shtml

**Input:**

Field	Required	Value	Description
Uid	Optional	String	Current user ID (If not presented, user name stored in cookie is the default value)
upassword	Optional	String	Current user password (If not presented, password stored in cookie is the default value)
myusername	Required	String	Redeem user ID
mypassword	Required	String	Redeem user password
ret_url	Optional	String (URL encoded)	Return URL, login successful page is the default value

**Output:**

If no ret\_url is presented, client would be led to login successful page, and in addition, a JavaScript window would

pop-up and show the result. If ret\_url is presented, client would return to ret\_url and gateway would add an additional variable rmsg to indicate redeem procedure result.

Field	Value	Description
rmsg	String, including:	Result and error messages
	Redeem process completed.	
	Original user name can not be found from the database.	
	Redeem user name can not be found from the database.	
	Original user password is incorrect.	
	Redeem user password is incorrect.	
	Original user type and ondemand user type do not match.	
	Original user has not login.	
	Redeem user login already.	
	Had been redeemed before.	
	User run out of quota.	
	Maximum allowable time is exceeded.	
	Maximum allowable memory space is exceeded.	
	Wrong postfix please check it.	
	This account is expired.	

- **On-demand account creation (Local User)**

**Path:**

(LAN IP address or Internal Domain Name)

/loginpages/UserAuthentication/OnDemandRecept.shtml

**Input:**

Field	Required	Value	Description
buttonNo	Required	Integer (1~10)	Billing Plan No.
random	Optional	Integer	A random number, this number is to prevent quick-click issue in IE 6.0.
ret_url	Optional	String (URL encoded)	Return URL.

**Output:**

If no ret\_url is presented, the client would be led to a ticket page in our UI style. If ret\_url is presented, client would be returned to ret\_url and receive the result containing created on-demand account information.

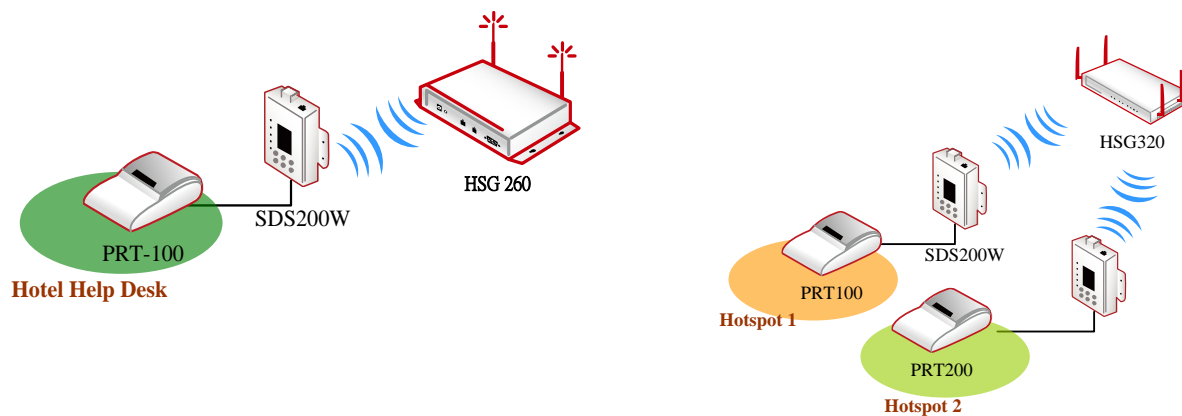
Field	Value	Description
Result	String, the format is: (separated by ',')  username, password, expiretime, usage, price, duration, serial number	If ret_url is presented, the client would return to ret_url page and carry the result valuable. expiretime is account expiration time which is a Linux time stamp, and duration is account duration time and the unit is 'day', serial number is account s/n.

## Appendix G. Terminal Server Setup

### Overview of Network Ticket Generator

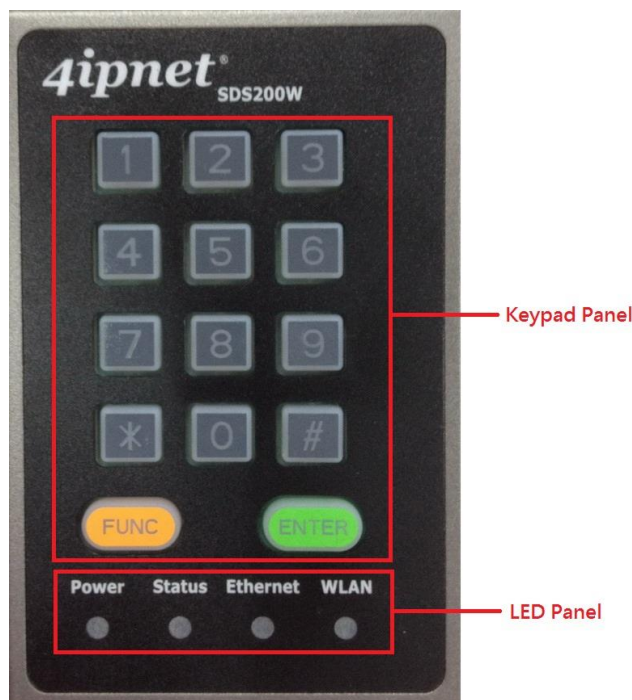
SDS200W is an innovative product 4ipnet offers to facilitate the communication between 4ipnet hotspot gateway and serial POS printer. It is mainly used to have the connected printer fast-print necessary account information extracted from a 4ipnet hotspot gateway for a user who would like to access the Internet or managed networks, making provisioning of wired or wireless connection easier and more user-friendly. What is noteworthy is that, SDS200W supports wireless connectivity to the uplink gateway. That is, operators now can deploy a network with lesser physical wires.

Here are some deployment examples:





## Keypad Panel Overview



## Useful Shortcut Keys

Combination	Function
'Number' + ENTER	To create and print out an on-demand account of an enabled billing plan of the uplink Hotspot gateway mainly for the user who purchased an account.
'Number 1' + 'asterisk (*)' + 'Number 2' + ENTER	Print a ticket of billing 'Number 1' with 'Number 2' units. For example, '8' + asterisk(*) + '3' + ENTER is equal to create an on-demand account of billing plan 8 with 3 units and have the POS printer print out the corresponding ticket. That is, the quota that billing plan 8 grants is multiplied by 3.
FUNC + '1' + ENTER	To print out the information of SDS200W, including (1) its IP address (2) the firmware version and the build number (3) the current listening port (4) uplink connection status (5) the IP address of the uplink 4ipnet gateway (HSG/WHG).
FUNC + ENTER	To clear what is pressed. This is used when the operator pressed a wrong button or combination. The system will also clear it automatically after five seconds.
FUNC + '0' + ENTER	To activate Safe Mode – disabling the FUNC + '1' + ENTER shortcut key in order to protect SDS200W's information leakage.
'4-digit' + ENTER	To unlock Safe Mode. This 4-digit password can be changed on the WMI at "System >> Safe Mode (Password)." The default value is '0000.'
'asterisk (*)' + ENTER	To lock the keypad, excluding the TAS and the Reset button. In Lock Mode, the <b>Status</b> indicator will enter into <u>special flashing</u> . Press asterisk (*) + ENTER again to disable the function, and the LED indicator <b>Status</b> will go back to

	<u>short illuminated intervals</u> or <u>long illuminated intervals</u> .
--	---

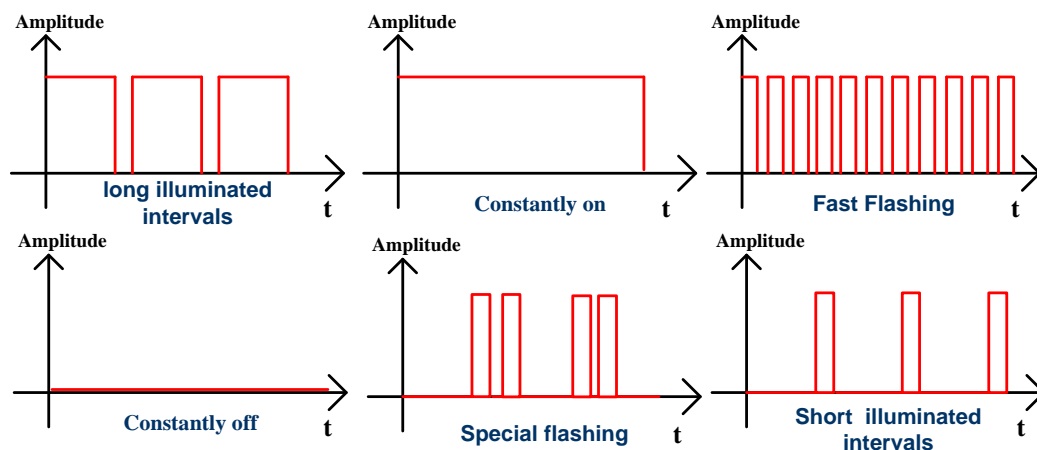
## LED Panel

### LED indicators

Power	When the power adapter is connected, <b>Power</b> will become <u>constantly on</u> ; when disconnected, the light turns into <u>constantly off</u> . Always check if <b>Power</b> is on before using SDS200W.
Status	<ol style="list-style-type: none"> <li>1. Short illuminated intervals means SDS200W successfully booted up. It flashes slowly.</li> <li>2. Long illuminated intervals means SDS200W and uplink device connected</li> <li>3. Special flashing means the keypad locked. The indicator fast-blinks twice periodically.</li> </ol> <p><i>Note: &lt;TAS Mode only&gt;</i></p> <ol style="list-style-type: none"> <li>4. Fast flashing means SDS200W trying to connect to uplink device.</li> <li>5. Constantly off for ten seconds means SDS200W fails to connect to uplink device after step 4. Afterwards, <b>Status</b> will go back to step 1.</li> <li>6. Constantly on for ten seconds means SDS200W succeeds in connecting to uplink device after step 4. Afterwards, <b>Status</b> will go to step 2.</li> </ol>
Ethernet	<p><b>Ethernet</b> turns into <u>constantly on</u> when an Ethernet cable is connected.</p> <p><b>Ethernet</b> blinks when the system detects wired traffic passing Ethernet. It is <u>constantly off</u> when no cable is connected.</p>
WLAN	<p><b>WLAN</b> behaves similarly as <b>Ethernet</b> - becoming <u>constantly on</u> when wireless connectivity is enabled (not necessarily connected. It just means that the RF card is ready to serve). <b>WLAN</b> blinks when the system detects wireless traffic. It is <u>constantly off</u> if the RF card is disabled.</p>

## Understanding the LED indicators

There are four LED indicators on the panel : **Power**, **Status**, **LAN**, and **WLAN** from left to right. Below summarizes all indication types in different states:



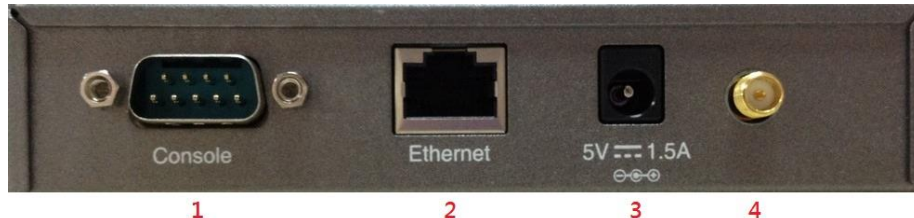
## Right Side Panel Overview



### Right Side Panel

- |                    |  |
|--------------------|--|
| 1. Kensington Lock | Be used to lock the device to a pole.  |
| 2. Restart / Reset | Press once to reboot the system. Hold for <u>five seconds</u> to make SDS200W set back to factory default settings.                  |
| 3. TAS             | Terminal Auto Setup (TAS). Press <u>three seconds</u> to initiate the auto uplink connection process. This will be introduced later. |

## Left Side Panel Overview



### Left Side Panel

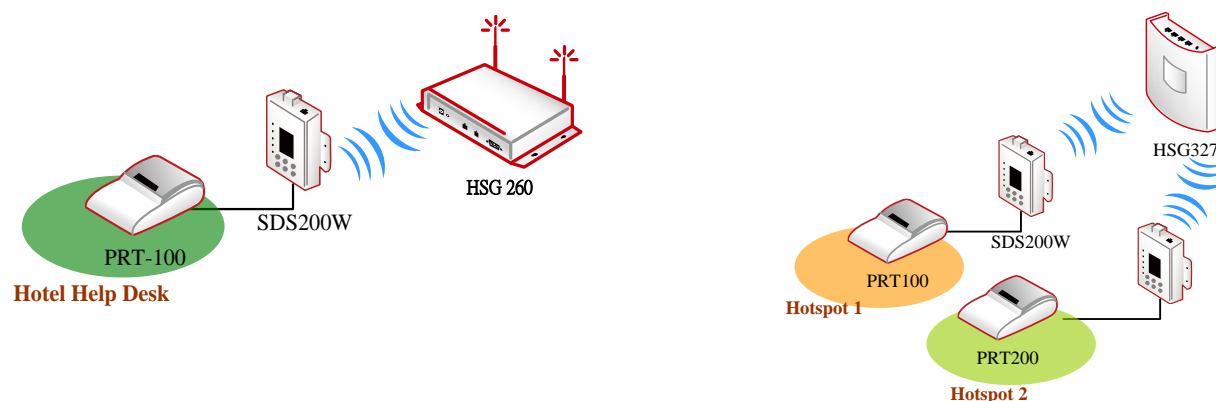
- |                      |   |
|----------------------|---|
| 1. Console           | Serial port for connecting to a POS printer.  |
| 2. Ethernet          | RJ-45 Ethernet port Serial port for connecting to the uplink gateway via wire.            |
| 3. 5V / 1.5A         | The DC power socket for connecting to an external power source through a DC power supply. |
| 4. Antenna connector | Assemble the dipole antenna within the package here.                                      |

### Caution:

*The SDS200W requires a lower voltage for operation even though it has the same power adaptor socket as PRT100. Make sure that the correct power adaptor is used (5V/1.5A) for SDS200W.*

## Including SDS200W into Your Network

The following diagram illustrates some deployment examples that show how the SDS200W can be connected to the POS printer and 4ipnet Gateways/Controllers.



1. Put relevant devices in place.
2. Attach a SDS200W to a power adaptor provided in the package.
3. Attach a POS printer to a power adaptor provided in the package and turn on the power switch situated on the left side of the device.
4. Connect a POS printer to the Console port of SDS200W by a RS-232 cable provided within the POS printer package.
5. Connect SDS200W to your 4ipnet Gateway/Controller via Ethernet port or wirelessly. If you are to do it wirelessly, conduct a site survey in the first place. The wireless coverage is subject to change.

►► **Note:**

You need to connect to the correct LAN port if your Gateway/Controller is operating in Port-based mode.

6. To verify if the deployment works fine. Press **FUNC + '1' + ENTER** to see if SDS200W is attached to a correct gateway and get an IP address from it. Additionally, press 'Number' + **ENTER** to see if an account with a certain billing plan can be printed out.

## Managing SDS200W on the Web Management Interface

SDS200W is designed specifically to operate in conjunction with all 4ipnet Gateways/Controllers, including both HSG and WHG series. If you are not using default settings, before connecting SDS200W to your 4ipnet Gateway/Controller, some configurations steps are required.

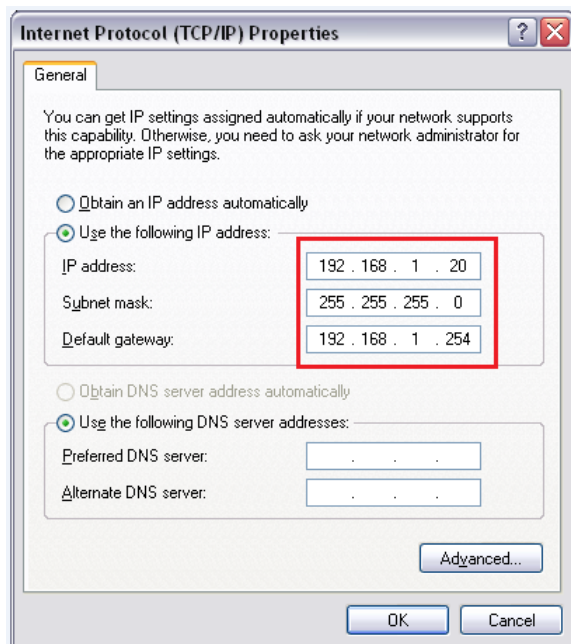
Go to the Web Management Interface (WMI) for SDS200W's relevant configurations. The default values are:

**IP address: 192.168.1.10**

**Subnet Mask: 255.255.255.0**

**Default Gateway: 192.168.1.254**

Remember to set the TCP/IP settings of the computer you use with a static IP address that is under the same subnet as SDS200W. For example: 192.168.1.20.



The settings of SDS200W are separated into seven categories, which are

1. **System** – to setup the system name and device control.
2. **Uplink** – to determine wired / wireless relevant parameters. Any change on this page will take effect after rebooting the system.
3. **Console** – to change console related settings for POS printers.
4. **Utility** – to upgrade the firmware version or backup/ restore SDS200W's configuration settings.
5. **Password** – to change administrator's password.
6. **Reboot** – to reboot (restart) the system.
7. **Status** – to overview device, system, uplink, and radio status if available.

## Setting Up SDS200W with the POS Printer

### Serial Settings

To make a POS printer properly functions with SDS200W, set up serial settings in advance in **Console** on SDS200W's WMI. The default values are for PRT-100 devices. Change the values if you use another POS printer.

## Printing On-demand Tickets for Your Customers

Operators have two ways of printing on-demand account tickets for their customers. One is to go onto the WMI of 4ipnet Gateway/Controller and create one (or more). See the manual of the 4ipnet Gateway/Controller you use; the other is to use SDS200W by the following two shortcut keys.

- (1) **'Number' + ENTER** or
- (2) **'Number 1' + asterisk (\*) + 'Number 2' + ENTER**

For example,

**'3' + ENTER** is to have POS printer print out a billing 3 ticket;

**'4' + asterisk (\*) + '2' + ENTER** allows operator to print a single ticket of billing plan 4 with two units of the quota.

That is, the given quota is multiplied by two. Note that the keys can only print out tickets one at a time. To

Batch-create tickets, turn to

[Main Menu](#) > [Users](#) > [Authentication](#) > [On-demand User Server Configuration](#) > [On-demand Account Batch Creation](#)

on 4ipnet controller's WMI.

Use **FUNC + ENTER** or wait 5 seconds to clear the wrong number just pressed.

## Setting Up SDS200W with the 4ipnet Gateway/Controller

SDS200W offers 'manual' and 'auto' connection to uplink 4ipnet Gateway/Controller. The former requires the administrator to go on to SDS200W's WMI to enter necessary columns that are supposed to fit what is set up on the controller end. However, the auto connection – called Terminal Auto Setup (TAS) – is particularly designed to establish a quick connection without previous setting.

### Manual setup

Connecting SDS200W to uplink 4ipnet Gateway/Controller manually, there are still two ways to achieve. One is through wired connection, and the other is via wireless connection.

#### Method 1: Wired Connection

Plug in an Ethernet cable between SDS200W and 4ipnet Gateway/Controller. Enter Network Settings and make sure they match what is determined on the controller. The change will take effect after (1) clicking **Save** and (2) rebooting the system. After SDS200W and the uplink device has built a successful connection, the **Status** indicator will blink with long illuminated intervals.

#### Method 2: Wireless Connection

Fill in Network Settings and Wireless Settings, click **Save**, and reboot the system. After SDS200W and the uplink device has successfully built up a connection, the **Status** indicator will blink with long illuminated intervals.

► **Note:**

When wired connection is established, the wireless connectivity will be turned off by the system automatically, meaning wireless and wired connection will not co-exist at any time. Wired connection has a higher priority.

The recommended step-by-step setup process is shown as follows.

**1 Basic Settings**

Service Zone Status	Enable
Service Zone Name	Default
Network Interface	Operation Mode: <input checked="" type="radio"/> NAT <input type="radio"/> Router
	IP Address: 192.168.1.254 *
	Subnet Mask: 255.255.0.0 *
	Network Alias List: <a href="#">Configure</a>
DHCP Server	Enable DHCP Server: <input checked="" type="checkbox"/>
	DHCP Server Configuration: <a href="#">Configure</a> SDS200W must be in Range
	Reserved IP Address List: <a href="#">Configure</a>
	DHCP Lease Protection: <input type="radio"/> Enable <input checked="" type="radio"/> Disable

[Main Menu > System > Service Zones > Zone Configuration](#)

**2 Terminal Server Configuration**

Status	Item	Server IP	Port	Location	Remark
●	1	192.168.1.10	5000		Add SDS200W onto the Terminal Server List
●	2				
●	3				

[Main Menu > Users > Authentication > On-demand User Server Configuration > General Settings > Terminal Server Configuration](#)

**3 Billing Plans**

Plan	Account Type	Quota	Price (\$)	Enable	Quick Account Creation	Group	Function
1	Duration-time	Valid from 2012/10/04 04:04:00 till 2013/10/04 04:07:00	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Group 2	<a href="#">Edit</a>
2	Duration-time	Valid for 1 day(s) elapsed time	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Group 2	<a href="#">Edit</a>
3	N/A			<input type="checkbox"/>	<input type="checkbox"/>	Group 1	<a href="#">Edit</a>

[Main Menu > Authentication > On-demand User Server Configuration > Billing Configuration](#)

When the settings are done completely on the 4ipnet Gateway/Controller side, go to SDS200W's WMI and check if every uplink setting matches that on the controller.

## Terminal Auto Setup (TAS – Only available on SDS200W)

TAS refers to an automatic connection mechanism that requires **NO previous network settings**. Just press the TAS button on SDS200W for three seconds, and it will automatically look for and associate to a suitable 4ipnet gateway that supports this function. The connection building process is as follows:

- 1st** D200W sees if wired connection to the uplink device is available.
- 2nd** Yes – establishes wired connection  
No – turns to wireless connection
- 3rd** Send a status report message 'failed' or 'successful' to the POS printer

The TAS connection will rewrite previous manual settings. You will see the **Uplink** page of the WMI grayed out and the **Status page** will show that the system is in TAS mode. The TAS process takes about thirty seconds to



complete. Whether the connection attempt succeeds or fails, the SDS200W will always have the printer print out if the connection is 'successful' or it 'failed.' Please make sure beforehand that the Ethernet cable is plugged in and the wireless environment is ok.


» **Note:**

The SDS100 can be set up the same way but it does not support wireless connections. Wired TAS uses port 5000 as the default value. The controller has to set the port to the right number, as well. Additionally, when trying to deploy TAS, make sure that the table of Terminal Server Configuration on the controller side is not filled up. Otherwise, the connection will fail.

## Applications for QR Code Log-in

```

-----
Username : $username
Password : $password
Quota : $usage
Total Price : $price
External ID : $extid
-----
ESSID : $wlan_ess_id
Wireless Key : $wep_key
-----
Your first time login must be
done before $expire_time

The account is valid within
    $duration days
after your first login.
-----

QR Code Login
Scan the QR code your device to login automatically
    
```

On-demand Account generation with a ticket generator is a very common deployment for hotspot providers. What makes it a hassle is to manually enter the Username and Password of the account, especially for mobile devices which require typing on small keyboards and are not easy on the eyes.

Log-in credentials including your Username, Password, Usage quota, Price and etc. are all embedded in the QR code.

Simply associate with the SSID, scan QR Code, and you are ready to surf the internet!

## Configuring your web ticket to support QR Code

The ticket needs to be customized in order to support the printing of QR Code.

Under **Main Menu >> Users >> Authentications**, click **On-demand User** and **Configure** for Ticket Template Customization.



Template Customization	
Image	Upload
Type	Type III <input type="button" value="Restore"/> <small>(For Hotel Cut-off time &amp; Duration-Time with Elapsed Time upon account create)</small>
Width	3" <input type="button" value="Restore"/>
Template	<div> <div> Font Size <input type="radio"/> Normal <input checked="" type="radio"/> Tall </div> <div>Parameters</div> </div> <div> <div> \$qr \$remain \$header \$2header \$3header \$username \$password \$usage \$price \$extid \$wlan_ess_id \$wep_key \$activationtime \$expiretime \$expire_time \$duration \$footer \$2footer \$3footer \$remark \$image \$unit \$date \$quota \$sprice \$qr </div> <div> <div> <div>SN: \$remain</div> <div>\$header</div> <div>-----</div> <div> Username : \$username  Password : \$password  Quota : \$usage  Total Price : \$price  External ID : \$extid </div> <div>-----</div> <div> ESSID : \$wlan_ess_id  Wireless Key : \$wep_key </div> <div>-----</div> <div>Your account is expired at \$expiretime</div> <div>-----</div> <div>\$qr</div> <div>\$remark</div> </div> <div> <div>Insert Parameters</div> </div> </div> </div>

For the utilized Billing Plan, the corresponding ticket template needs to be customized to support QR Code.

- 1) The width needs to be changed to 3" (default value = 2")
- 2) The parameter needs to be added by typing in "\$qr" on the template, or select "\$qr" from the drop-down menu and click Insert Parameters.

►► **Note:**

Only 4ipnet PRT200 thermal printers support the printing of QR code.

Installation of a QR Code scanning App on your mobile device is required (such as QuickMark, QR Reader, Barcode Scanner).

Switch off Auto-Join and Auto-Login to prevent the mobile device from jumping back to the remembered network.

## Troubleshooting SDS200W

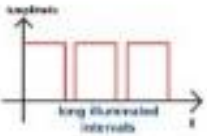
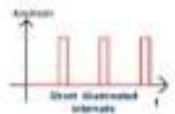


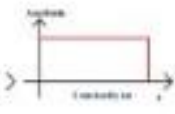

Q1. SDS200W can not have the POS printer print out accounts

1. See if the printer is still connected to SDS200W.
2. Check if the panel is locked by looking at the **Status** indicator. If it belongs to special flashing, unlock the keypad by pressing \* + **ENTER**.
3. Press **FUNC** + '**1**' + **ENTER** to see SDS200W's state. Check if every value is proper.
4. See the Status indicator on the device panel. If it is short illuminated intervals, the device is then not connected to the controller. Try to establish the connection again.
5. Read through the section 'SDS200W with 4ipnet controller' to ensure the settings.

Q2. The TAS triggered connection is not working.

1. Check if the capability is disabled by someone. Go to "System >> TAS button" on SDS200W's WMI to enable the function.
2. Make sure the cable is plugged and SDS200W is placed in the coverage of the hotspot gateway you want to associate to (wirelessly).
3. Check if the Terminal Server Configuration table on the gateway has at least one empty field for the controller for the system to automatically add SDS200W to the list. If not, clear one space for TAS.

## Connection Status With Indicators

Display	State
<p>Long illuminated intervals</p> 	<p>SDS200W and the uplink device is connected.</p>
<p>Short illuminated intervals</p> 	<p>The system is ready, but uplink connection has not been set up yet.</p>
<p>Fast flashing</p> 	<p>(TAS) SDS 200W is trying to connect to the uplink controller.</p>
<p>Special flashing</p> 	<p>The keypad is locked. Unlock it by pressing * + <b>ENTER</b>. It is a 10-second state.</p>
<p>Constantly on</p> 	<p>(TAS) SDS 200W succeeds in connecting to the controller. It is a ten-second state.</p>
<p>Constantly off</p> 	<p>(TAS) SDS 200W fails to connect to the controller</p>

## Shortcut Keys

Combination	Function
'Number' + <b>ENTER</b>	Print a ticket of billing plan 'Number'
'Number 1' + * + 'number 2' + <b>ENTER</b>	Print a ticket of billing 'Number 1' with 'Number 2' units.
<b>FUNC</b> + '1' + <b>ENTER</b>	To print out SDS200W's status.
<b>FUNC</b> + <b>ENTER</b>	To clear what is pressed.
<b>FUNC</b> + '0' + <b>ENTER</b>	To activate Safe Mode – disabling the <b>FUNC</b> + '1' + <b>ENTER</b> shortcut key in order to protect SDS200W's information leakage.
'4-digit' + <b>ENTER</b>	To disable Safe Mode.
* + <b>ENTER</b>	To lock the keypad.

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